Emulex Drivers for VMware ESX/ESXi 4.1

User Manual

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One Network.
One Company.
Connect with Emulex.

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Supported Driver Versions

Driver Version	Comments
FC/FCoE Drivers	
8.2.1.86.26	
8.2.1.90.28	
Ethernet Drivers	
2.102.518.0	
2.103.377.0	
iSCSI Drivers	
2.102.525.9	

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Driver Information

Supported Features

- Supports the Emulex OneConnect family of UNCAs.
- Supports dynamic parameter setting using the OneCommand™ Manager application, version 5.1, from Emulex. It is a GUI and CLI-based configuration utility used as part of a master kit, enabling driver configuration including:
    - Supports the CIM interface through OneCommand Manager to manage ESX/ESXi
    - Out-of-band (TCP/IP) remote SAN management capability
    - Diagnostics (loopback and diagnostic dump [except for OneConnect adapters])
    - LUN (logical unit number) masking
    - Virtual port support

  See the OneCommand Manager User Manual for a complete list of supported features.
- Supports the following protocols:
    - NIC
    - Fibre Channel (FC)/Fibre Channel over Ethernet (FCoE)
    - Fibre Channel initiator mode
    - SCSI-FCP
    - FCP-2
- SNIA-CTP compliant SMI-S 1.1 Provider
- Supports the following topologies:
    - FC-AL (Fibre Channel Arbitrated Loop)
    - Point-to-point
    - Fabric with auto-topology negotiation
- Supports FC in-band management
- Supports 1, 2, 4, 8, and 10-Gb/s capable adapters with auto-rate negotiation. (1 Gb/s is not supported on 8 Gb/s adapters.)
- Tested with up to sixteen adapter ports
- Support for Common HBA API
- Batch firmware download capability
- PCI hot-plug support (vendor specific)
- VPD (Vital Product Data) support
- NPIV (N_Port ID Virtualization) support
- Adapter personality change support

New Features in this Release

- Supports the Emulex OneConnect OCe 11102 UNCAs
- Supports iSCSI
- Supports iSCSI hardware offload

Prerequisites

- There are no prerequisites at this time.

Compatibility

- For a list of adapters that are compatible with this driver, see the driver Downloads page on the Emulex website. For compatible firmware versions, see the Downloads page for the specific adapter.

Things to Know Before You Download

- The driver is matched to a particular version of the Emulex Core Kit, the adapter firmware, and the NIC driver. Refer to the Downloads page on the Emulex website for details.

Known Issues

- See the product release notes for the latest information.

Installing the FC/FCoE Driver

Introduction

This part of the guide provides installation and troubleshooting information for the Emulex OneCommand™ Manager application using the FC/FCoE interface. Before using this product, you need a working knowledge of FC/FCoE, TOE (TCP Offload Engine) technology, and the fundamentals of network storage devices.

Installing the FC/FCoE Driver and Management Software

The Emulex driver is available through the VMware support site. Refer to the VMware support website for further details.

See the OneCommand Manager Command Line User Interface Manual for instructions on how to install the application on the ESX COS.

Note: Before installing the Emulex OneCommand Manager Kit, you must install the lpfc driver from the VMware website.

Note: Before installing OneConnect network drivers and management software, verify that the firmware version is correct. If it is, proceed with the installation. If it is not, update the firmware using the OneCommand Manager application and reboot your system before proceeding with the installation.

Uninstalling the FC/FCoE Driver

See the VMware Patch Download page for instructions.

Installing the FC/FCoE Utilities

Follow these instructions to install the OneCommand Manager application.

To install the OneCommand Manager agent:

1. Log in as 'root.'
2. Copy the `elxocmcore-esx41-<kit version>.x86_64.rpm` file to a directory on the install machine.
3. CD to the directory to which you copied the RPM file.
4. Install the RPM file. Type:

   ```
   rpm -U elxocmcore-esx41-<kit version>.x86_64.rpm
   ```

   For example:

   ```
   rpm -U elxocmcore-esx41-5.0.43.6-1.x86_64.rpm
   ```

   The RPM file contents are installed in /usr/sbin/ocmanager. The CLI utility is also located in this directory.

Uninstalling the FC/FCoE Utilities

Follow these instructions to uninstall the Emulex configuration utilities. To uninstall the OneCommand Manager agent:

1. Log in as 'root.'
2. Type "`rpm -qa | grep elx`" to verify that this kit is installed. This command should list `"elxocmcore-esx41-<kit version>"` for the current release.
3. Type:

   ```
   rpm -e elxocmcore-esx41-<kit version>
   ```

Installing the NIC Driver

Introduction

This part of the guide provides installation and troubleshooting information for the Emulex OneConnect UCNA. Before using this product, you need a working knowledge of the NIC (network interface card), TOE (TCP offload engine) technology, and the fundamentals of network-storage devices.

Installing the NIC Driver and Management Software

The Emulex NIC driver for VMware ESX 4.1 is available through the VMware support site. The VMware support website also includes a documentation link to the correct installation procedures for this driver. Follow the installation instructions provided on the VMware support website.

See the OneCommand Manager Command Line User Manual for instructions on installing the Emulex core kit.

Note: Before installing the Emulex OneCommand Manager Kit, you must install the lpfc driver from the VMware website.

Note: Before installing OneConnect network drivers and management software, verify that the firmware version is correct. If it is, proceed with the installation. If it is not, update the firmware using the OneCommand Manager application and reboot your system before proceeding with the installation.

Uninstalling the NIC Driver

See the VMware Patch Download page for instructions.

Installing All the Drivers

To install all drivers, use the 'esxupdate' utility provided by VMware in ESX and ESXi platforms. The drivers and components that can be installed include:

- LPFC
- NIC
- iSCSI

LPFC Driver

The LPFC driver is the driver used for LP adapters and the UCNA adapter FCoE ports. To install the lpfc driver, execute the following command in the command prompt of the ESX/ESXi host:

```
#esxupdate --maintenancemode --nosigcheck update -b <lpfc driver iso>
```

where <lpfc driver iso> is the lpfc driver released as an iso.

For example,

```
vmware-esx-drivers-scsi-lpfc820-400.8.2.0.86.26-
   1vmw.2.17.00000.x86_64.iso
```

NIC Driver

The NIC driver is the driver for the NIC ports of the UCNA adapters. To install the NIC driver, execute the following command in the command prompt of the ESX/ESXi host:

```
#esxupdate --maintenancemode --nosigcheck update -b <BE NIC driver>
```

where <BE NIC driver> is the be NIC driver released as an iso.

For example,

```
vmware-esx-drivers-net-be2net-400.2.102.499.0-
   1vmw.2.17.249663.x86_64.iso
```

iSCSI Driver

The iSCSI driver is the driver for the iSCSI ports of the UCNA adapters. To install the iSCSI driver, execute the following command in the command prompt of the ESX/ESXi host:

```
#esxupdate --maintenancemode --nosigcheck update -b <BE iSCSI driver>
```

where <BE iSCSI driver> is the iSCSI driver released as an iso.

For example,

```
vmware-esx-drivers-scsi-be2iscsi-400.2.103.308.0-
   1vmw.0.0.235786.x86_64.iso
```

esxupdate Procedure

For esxupdate installs, perform the following procedure.

Directly mount the ISO image in this manner:

```
[root@testmachine ~]# mkdir /tmp/mountpoint
[root@testmachine ~]# mount -r -o loop /path/to/driver.iso /tmp/
   mountpoint
```

Once the ISO image is mounted, the offline bundle can be accessed in the /tmp/mountpoint/offline-bundle/directory. Since the offline bundle file name will vary depending on the package that is to be installed, the example below uses the name 'offline-bundle.zip' - please replace this file name with the name of the offline bundle to be installed

An offline bundle can be installed on a VMware ESX server locally using the "esxupdate" command. The following example uses the offline bundle file name "offline-bundle.zip"; when using this example as a reference, make sure to use the file name of the offline bundle to be installed (note the "--maintenance" parameter is required for FCoE, NIC, and iSCSI driver installations):

```
[root@testmachine ~]# esxupdate --nosig --maintenance update --bundle
   offline-bundle.zip
```

Reboot the VMware ESX server to activate the new drivers.

Virtualization Features

For the best performance, you must install VMware Tools in each guest operating system. For information on installing VMware Tools in a Linux or Windows guest operating system, refer to the VMware ESX Server 4.1 documentation.

Enabling the NetQueue Feature

To use the multiple interface feature in ESX Server, you must enable the NetQueue feature in ESX Server. The NetQueue feature is enabled by default.

- To check if NetQueue is enabled, run the following command from the ESX Server console:

  ```
  # esxcfg-advcfg -j netNetqueueEnabled
  ```

  If it prints 'netNetqueueEnabled = FALSE', the feature is disabled.
- To enable NetQueue, run the following command:

  ```
  # esxcfg-advcfg -k TRUE netNetqueueEnabled
  ```

Reboot the ESX Server for the change to take effect.

How an ESX Server Creates and Names Interfaces

The NIC driver supports a maximum of four UCNAs per system. For dual-channel UCNAs running in standard operating mode, the driver creates two interfaces (one for each physical port). The first and second interfaces are respectively named vmnic0 and vmnic1 (assuming there are no other network interfaces in your configuration). The same applies to virtual NIC (vNIC)-capable UCNAs when vNIC mode is disabled in the adapter BIOS (for those boards that support vNIC).

When vNIC mode is enabled in the adapter BIOS and the UCNA is in NIC only mode, the driver creates eight interfaces (four for each physical port). When vNIC mode is enabled in the adapter BIOS and the UCNA is in FCoE or iSCSI mode, the driver creates only 6 NIC interfaces. The other two interfaces are

reserved for the FCoE and iSCSI. The interfaces are labeled vmnic0 through vmnic7 (assuming there are no other network interfaces in your configuration). All eight vNICs are fully functional and support the same feature set as a standard NIC. The vNICs can also be linked to a virtual switch in the same way:

```
# esxcfg-nics -l //list recognized nics
# esxcfg-vswitch -l //list available vswitches
# esxcfg-vswitch -a vSwitch0 //create vSwitch0
# esxcfg-vswitch -A VMNet0 vSwitch0 //create virtual machine
network, VMNet0 and add it to vSwitch0
# esxcfg-vswitch -L vmnic0 vSwitch0 //link vmnic0 to vSwitch0
```

The only difference being that in vNIC mode, each of the four vNICs tied to a physical port share the port's 10GbE bandwidth.

Configuring VLANs

The OneCommand Manager application supports VLAN filtering in the hardware. To configure VLANs on a OneConnect interface, create the vSwitch with the required VLAN ID and use this interface as an adapter to this vSwitch. A native VLAN can also be configured in the guest operating system in VGT (Virtual Guest Tagging) mode. (For example, using vconfig in the Linux guest operating system.)

Configuring Network Heap Size in ESX Server

The amount of memory allocated by default for a network heap depends on the amount of memory configured in the system. The ESX Server network stack allocates a minimum of 64MB to the network heap to handle network data. More memory is allocated to the network heap if the system is configured with more memory. If the network load requires more than 64MB of memory, the OneConnect driver cannot allocate it. When this happens, the driver logs messages in the file /proc/vmware/log indicating that the alloc_skb() call failed. This impacts network performance considerably.

- To read the current size of the network heap, run:

  ```
  # esxcfg-advcfg -j netPktHeapMaxSize
  netPktHeapMaxSize = 0
  #
  ```

- If the default value of 64MB is in effect, this command shows the size as 0. If any other value is in effect, the command prints that value.
- For example, to set the heap size to 128MB, run the command:

  ```
  # esxcfg-advcfg -k 128 netPktHeapMaxSize
  # esxcfg-advcfg -j netPktHeapMaxSize
  netPktHeapMaxSize = 128
  #
  ```

The new value takes effect after a reboot.

Interrogating the NIC Driver

To get information on the installed NIC driver, enter:

```
esxupdate query --vib-view | grep be2net
```

This is a sample output:

```
[root@blade10]# esxupdate query --vib-view | grep be2net
cross_vmware-esx-drivers-net-be2net_400.2.102.225.12-1.0.4.164009
installed 2010-04-05T11:28:38.540372-07:00
cross_vmware-esx-drivers-net-be2net_400.2.102.200.10-1.0.4.164009
retired 2010-03-18T13:59:02.520994-07:00
```

Configuration

Introduction to FC/FCoE Configuration

You can configure the driver parameters using native ESX tools or the Emulex OneCommand Manager application. This document describes how to configure parameters using native ESX tools. For a more comprehensive description of ESX tools, refer to VMware's public website. If you have further questions, contact a VMware technical support representative. Refer to the Emulex OneCommand Manager User Manual for more information about the utility.

Note: For VMware ESX Server systems, the firewall on the ESX Server must be opened to manage systems remotely using TCP/IP. To enable TCP port #23333, run the following commands:

```
esxcfg-firewall --openPort 23333,tcp,in,onecommand
esxcfg-firewall --openPort 23333,tcp,out,onecommand
```

To verify that the correct port is open, run the following command:

```
esxcfg-firewall -q
```

The TCP port number can be changed. The default is 23333.

Refer to the VMware Server Configuration Guide for more details on how to configure the ESX firewall.

Temporary FC/FCoE Configuration Methods Using Native ESX Tools

There are four ways to configure the driver parameters:

- Permanent (global)
- Permanent (per adapter)
- Temporary (global)
- Temporary (per adapter)

Note: The OneCommand Manager application, version 5.1 also supports all four ways to configure driver parameters. This is the preferred method of setting configuration parameters. Refer to the OneCommand Manager 5.1 User Manual for more information.

Permanent FC/FCoE Configuration Methods Using Native ESX Tools

Permanent configuration requires that the new values be saved in the ESX environment. These changes are considered permanent because they stay in effect across system reboots.

To make changes that impact all adapters in the system (global changes), follow these steps. See "FC/FCoE Driver Configuration Parameters" on page 9 for parameter names and values. Parameter values are in both hexadecimal and decimal.

1. From the Console Operating System (COS) terminal window type:

   ```
   esxcfg-module -s "param=value param2=value..." <driver_name>
   ```

   The <driver_name> is obtained from the `vmkload_mod -l` call. Look for the "lpfc" prefix.

2. Reboot the server. Type:

   ```
   reboot
   ```

Note: VMware does not officially support unloading the driver via vmkload_mod -u. If you must unload the driver, contact VMware technical support.

Note: NPIV port creation and deletion are performed by the VMware vSphere client or Virtual Center service. Refer to the VMware documentation for more information.

Example of Permanent Global Configuration

The following example sets lun_queue_depth (the maximum number of commands that can be sent to a single LUN) to 20 (default is 30) for all Emulex adapters in your system.

1. Locate the parameter lpfc_lun_queue_depth in Table 1 on page 9.
2. Set the permanent value. Type:

   ```
   esxcfg-module -s "lpfc_lun_queue_depth=20" lpfc820
   ```

3. Reboot the server. Type:

   ```
   reboot
   ```

   The new setting is used when the driver reloads.

   To verify the setting type:

   ```
   esxcfg-module -g lpfc820
   ```

Example of Permanent Per-Adapter Configuration

The following example sets lun_queue_depth to 20 (default is 30) for adapter #1.

1. Set the adapter-specific value. Type:

   ```
   esxcfg-module -s "lpfc1_lun_queue_depth=20" lpfc820
   ```

2. Reboot the server. Type:

   ```
   reboot
   ```

   The new setting is used when the driver reloads.

   To verify the setting type:

   ```
   esxcfg-module -g lpfc820
   ```

The following example sets lun_queue_depth to 20 (default is 30) for adapter #1 and lun_queue_depth to 10 (default is 30) for adapter #2.

1. Set the adapter-specific value. Type:

   ```
   esxcfg-module -s "lpfc1_lun_queue_depth=20
   lpfc2_lun_queue_depth=10" lpfc820
   ```

Note: Type the command all on one line without a carriage return.

2. Reboot the server. Type:

   ```
   reboot
   ```

   The new settings are used when the driver reloads.

   To verify the settings type:

   ```
   esxcfg-module -g lpfc820
   ```

Dynamically Adding LUNs and Targets

For instructions on dynamically adding LUNs and targets, refer to the “Using Rescan” section of the VMware SAN Config documentation.

Emulex FC/FCoE Driver Configuration Parameters

All adapter-specific parameters have an lpfc*X*_ prefix (where *X* is the driver instance number). For example, setting lpfc0_lun_queue_depth=20 makes 20 the default maximum number of commands that can be sent to a single logical unit (disk) for lpfc instance 0.

Dynamic parameters do not require a system reboot for changes to take effect.

Table 1: FC/FCoE Driver Configuration Parameters

Variable	Default	Min	Max	Dynamic	Comments
lpfc_hba_queue_depth	8192	32	8192	No	Maximum number of FCP commands that can queue to an Emulex adapter. The value cannot exceed what the adapter supports.
lpfc_ack0	0	0=Off	1=On	No	Use ACK0 for class 2.
lpfc_discovery_threads	32	1	64	No	Specifies the maximum number of PLOGI commands that can be outstanding for a discovery.
lpfc_fcp_class	3	2	3	No	FC class for FCP data transmission.
lpfc_fdmi_on	0	0	2	Yes	False (0) if disabled. (1) or (2) if enabled, depending on type of support needed.
lpfc_link_speed	0	0=auto select 1=1 Gb/s 2=2 Gb/s 4=4 Gb/s 8=8 Gb/s		No	Sets link speed. **Note:** Not supported for FCoE.
lpfc_log_verbose	0x0	0x0	0x7fffffff	Yes	Extra activity logging (bit mask).
lpfc_lun_queue_depth	30	1	128	Yes	Default max commands sent to a single logical unit (disk).

Table 1: FC/FCoE Driver Configuration Parameters (Continued)

Variable	Default	Min	Max	Dynamic	Comments
lpfc_max_scsicmpl_time	0	0	60000	Yes	Limits SCSI command completion time (in mS) to control I/O queue depth. The default (0) means the SCSI layer maintains control.
lpfc_scan_down	1	0=Off	1=On	No	Select a method for scanning ALPA to assign a SCSI ID.
lpfc_tgt_queue_depth	8192	10	8192	No	Default maximum number of commands sent to a single target. By default, there is no effective limit at the target level.
lpfc_topology	0	0x0=loop then P2P 0x1=internal loopback 0x2=P2P only 0x4=loop only 0x6=P2P then loop		No	FC link topology. (Defaults to loop. If that fails, the driver attempts to link in point-to-point mode). **Note:** Not supported for FCoE.
lpfc_use_adisc	0	0=Off	1=On	Yes	Send ADISC instead of Port Login (PLOGI) for device discovery or Registered State Change Notification (RSCN).
lpfc_devloss_tmo	10	1	255	Yes	Number of seconds a remote port can drop from the SAN before that port is removed from the driver.
lpfc_use_msi	0	0 = use INTX (min) 1 = use MSI 2 = use MSI-X (max)		No	Selects which interrupt mode to use. By default, the driver uses INTX. VMware guidance is to use MSI-X, but MSI is available.
lpfc_fcp_wq_count	4	1	31	No	Configures the number of fast-path work queues used by the host and port.
lpfc_fcp_eq_count	4	1	7	No	Configures the number of fast-path event queues used by the host and port.
lpfc_sg_seg_count	64	64	256	No	Configures the maximum number of scatter-gather elements the driver accepts in a single SCSI command.

Table 1: FC/FCoE Driver Configuration Parameters (Continued)

Variable	Default	Min	Max	Dynamic	Comments
lpfc_iocb_cnt	1	1	5	No	IOCBs allocated for ELS, CT, ABTS in 1024 increments, Default is 1.

Creating a Fibre Channel Remote Boot Disk

For instructions on creating a Fibre Channel remote boot disk, refer to the VMware SAN configuration documentation, “Chapter 6, Using Boot from SAN with ESX Server Systems.”

Managing ESX/ESXi Server Through the CIM Interface

This manual also describes how OneCommand Manager can be configured to manage VMware ESX and ESXi servers through the CIM interface. Please note that the management of adapters in the VMware ESX/ESXi hosts through the CIM interface is enabled only for the OneCommand Manager applications running on the Windows environment.

Installing the Emulex CIM Provider

To install the Emulex CIM provider, use the 'esxupdate' utility provided by VMware in ESX and ESXi platforms. For esxupdate procedure, refer to “esxupdate Procedure” on page 5 for more details.

CIM Provider

The Emulex CIM Provider is available as a 'core kit' rpm in ESX platform and as an offline bundle in ESXi platforms.

To install the CIM Provider core kit installation, which is only for ESX, execute the following command in the command prompt of the ESX host:

```
#rpm -ivh <CIM Provider rpm>
```

where <CIM Provider rpm> is the released CIM Provider rpm.

For example,

```
elxocmcore-esx40-5.1.32.2-1.x86_64.rpm
```

To install the CIM Provider offline bundle installation, which is only for ESXi, execute the following command in the command prompt of the ESXi host:

```
#esxupdate --maintenancemode --nosigcheck update --bundle <offline-
   bundle.zip>
```

where <offline-bundle.zip> is the offline bundle for the Emulex CIM Provider.

For example,

```
ELX-ESX-4.1.0-emulex-cim-provider-3.2.16.1-offline_bundle-311859.zip
```

For more information about the ESX Patch Management activities, please refer to the below documents:

- http://www.vmware.com/pdf/vsphere4/r40/vsp_40_esxupdate.pdf
- http://www.vmware.com/pdf/vsphere4/r41/vsp_41_esxupdate.pdf

Once the above steps are complete, the system has to be rebooted for the changes to be effective.

After the reboot is completed, verify that the drivers and the CIM Provider are correctly installed by typing the following commands

```
#esxupdate --vib-view query | grep be2
#esxupdate --vib-view query | grep lpfc
#esxupdate --vib-view query | grep emu
```

For additional configuration information, refer to “Managing Devices using CIM” on page 15 for more details.

Working with VPorts (Virtual Ports)

Creating, Deleting and Displaying VPorts

The Emulex driver for VMware supports NPIV by default. The only management API for creating and deleting a VPort and creating an NPIV-enabled virtual machine comes from ESX. VPorts in the driver discover the fabric just like physical ports do, and are subject to the same SAN delays. As the number of VPorts increases, the amount of time it takes to complete remote port discovery increases. This is because the VPorts are created sequentially and each VPort executes discovery synchronously. If your NPIV-enabled virtual machines power-on automatically, powering on could take longer than usual. This is normal for NPIV virtual machines.

Note: Ensure you are using the latest recommended firmware for VPort functionality. Check the Emulex website for the latest firmware.

Note: Loop devices and NPIV are not supported on the same port at the same time. If you are running a loop topology and you create a VPort, the VPort’s link state is *offline*. VMware ESX supports only fabric mode.

Note: You can create VPorts only on 4 Gb/s, 8 Gb/s, and OneConnect adapters. You cannot create VPorts on 1 Gb/s or 2 Gb/s adapters.

Note: The OneCommand Manager application sees all VPorts created by the driver, but the application has read-only access to them.

NIC Network Driver Performance Tuning

Network driver performance tuning improves performance of the network and the TCP Offload driver. The OneConnect Universal Converged Network Adapter (UCNA) is an x8, Generation 2 ("Gen 2", or Gen2) PCI-Express (PCIe) device and requires substantial system-memory bandwidth to support 10 Gb/s data streams.

Using vmxnet Emulation, Enabling Jumbo Frames, and TSO

The OneConnect UCNA supports jumbo frames and TSO, both of which are necessary to achieve optimal performance with the OneConnect UCNA. Also, the use of the vmxnet NIC emulator can provide a significant performance boost. These features are not enabled by default in ESX Server. To enable these features:

1. Log into the console operating system.
2. For each guest operating system, there is a .vmx file in the path:

   `/vmfs/volumes/*/<VM-NAME>/VM-NAME>.vmx`

   where <*VM-NAME*> is the name of the VM.

3. For each VM, edit this file and add the following line for the OneConnect driver interface:

   ```
   ethernet0.features="15"
   ```

4. To enable vmxnet emulation, add the following line for the OneConnect driver interface:

   ```
   ethernet0.virtualDev="vmxnet"
   ```

5. Restart the VMs.

Steps 1 through 5 assume that eth0 is the interface added to the VM from the OneConnect Network.

Note: The use of vmx NIC emulation requires VMware Tools to be installed in the guest operating systems. For information on installing VMware Tools in a Linux or Windows guest operating system, refer to the VMware ESX Server 4.1 documentation.

Configuring a Virtual Switch to Use Jumbo Frames

To use jumbo frames, you must increase the MTU (Maximum Transmission Unit) size in the vSwitch and also in the guest operating system. For the best performance, set the MTU to the maximum supported by the OneConnect driver, which is 9000 bytes. This requires the MTU to be changed in the virtual switch as well as the guest operating systems..

Note: You can configure TSO (**T**CP **S**egmentation **O**ffload) and jumbo frames using the vSphere client.

Setting the MTU Size in the vSwitch

To change the MTU to 9000, run the following command for each switch in the console operating system:

```
esxcfg-vswitch vSwitch<N> -m 9000
```

where <*N*> is the number of the switch.

Setting the MTU Size for a Linux Guest Operating System

To set the MTU of the OneConnect driver interface in each Linux Guest operating system to 9000, run the following command:

```
ifconfig eth<N> mtu 9000
```

where <*N*> is the number of the Ethernet interface on which you are working.

Setting the MTU Size for a Windows Guest Operating System

To set the MTU in each Windows guest operating system:

1. Go to the **Start** menu and select **Control Panel** > **System**.
2. Select the **Hardware** tab and open **Device Manager**.
3. Expand the **Network Adapters** heading.
4. Right click on the **NIC**, and select **Properties**.
5. Select the **Advanced** tab and set the MTU value.

Pinning VMs and Interrupts to CPUs

The OneConnect driver supports MSI-X interrupts. The driver requests separate MSI-X interrupt request (IRQ) vectors for each of the interfaces. Pinning VMs and the IRQ vector to a CPU core helps provide the best performance from the OneConnect UCNA. With a multi-core CPU, pinning a VM (and the MSI-X vector of the OneConnect driver interface configured in that VM) to two cores sharing an L2 cache provides the best performance. For example, in a quad core Xeon, CPU0 and CPU1 share a 4MB L2 cache. If you have configured vmnic16 in VM1, for the best performance pin VM1 to CPU0 and the IRQ corresponding to vmnic16 to CPU1.

To pin a VM to a CPU in the VI Client:

1. Power off the VM.
2. Click **Edit Settings** in the **Resources** tab for that VM.
3. Select **Advanced CPU**.
4. In the **Scheduling Affinity** frame, select the CPU to pin it to.
5. Power on the VM.

To pin an IRQ vector to a CPU, run the following command in the console operating system:

```
echo "move <IRQ-NO> <CPU-ID>" > /proc/vmware/intr-tracker
```

You can find the IRQ-NO corresponding to a vmnic by running:

```
cat /proc/vmware/interrupts
```

To see all IRQ Vectors and the CPU to which they are pinned, run:

```
cat /proc/vmware/intr-tracker
```

Managing Devices using CIM

VMware on the Visor-based ESX platforms uses the Common Interface Model (CIM) as the only standard management mechanism for device management. OneCommand Manager uses the standard CIM interfaces to manage the adapters in the ESX COS and Visor environments. OneCommand Manager supports the CIM-based device and HBA management in addition to the existing HBA management functionality around its proprietary management stack along with the standard HBAAPI interface.

For One Command Manager to manage the adapters of an ESXi host, the ESX/ESXi host should be installed with the Emulex CIM Provider. ESX/ESXi 3.5, 4.0 and 4.1 come along with an inbox Emulex CIM Provider. The inbox Emulex CIM Provider provides capabilities to manage the Emulex Light Pulse adapters, but not the Emulex UCNA adapters. For managing the Emulex UCNA adapters, the out of the box Emulex CIM Provider needs to be installed explicitly. The Emulex CIM Provider is available as a 'core kit' rpm in ESX COS platform and as an offline bundle in ESXi platforms. The offline bundle is the VMWare's recommended way for software upgrades for the VMWare platforms.

For more information about the ESX Patch Management activities, please refer to the below documents:

- http://www.vmware.com/pdf/vsphere4/r41/vsp_41_esxupdate.pdf

Adding a Range of Hosts

You can find the TCP/IP-accessed manageable hosts by searching a range of IP addresses. The Add Range of TCP/IP Hosts dialog box enables you to build the initial list of TCP/IP accessed manageable hosts.(Not available in read-only mode.)

Note: The ranges of IP addresses are only scanned each time you open the Add Remote TCP/IP Hosts dialog box and click Start Discovery. The ranges are NOT automatically scanned by the discovery server during its discovery cycles.

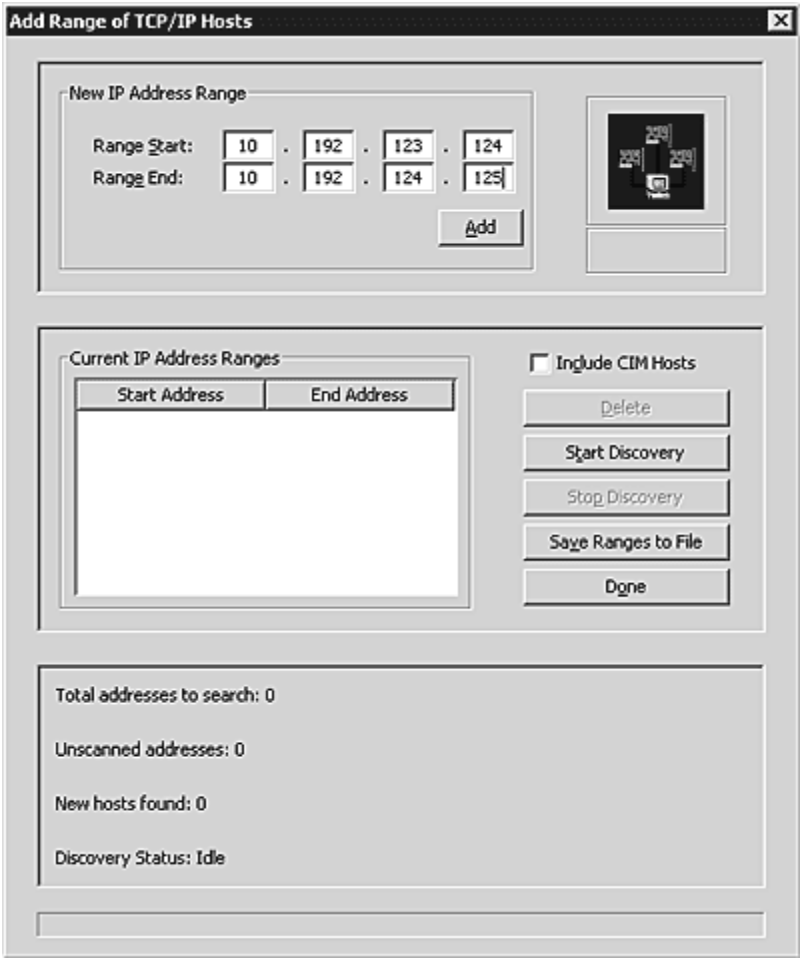

Figure 1: Add Range of TCP/IP Hosts dialog box

The only prerequisite for this procedure is that the OneCommand Manager application must be installed on all remote hosts.

To add a range of remote hosts:

1. From the Discovery menu, select **TCP/IP** > **Add Range of Hosts**.

   The Add Range of TCP/IP Hosts dialog box appears.

2. Enter the complete start and end address range and click **Add**.

   The added address range appears in the dialog box. Add any additional ranges you want to search.

3. Click **Start Discovery**.

   If an address is remotely manageable, it is added to the list of addresses that the discovery server will attempt to discover. The utility creates a host file if necessary, and checks each address in the range to determine if the host is available and remotely manageable. The number of addresses (of manageable hosts) discovered is periodically updated on the dialog box.

4. To save the IP address ranges, click **Save Ranges to File** to save the specified range(s) to a file so that these address ranges appear the next time you use the Add Range of TCP/IP Hosts dialog box.

5. Check the ‘Include CIM hosts’ check box to include ESX hosts that can be managed by the CIM interface whose IP Address fall in the specified range of IP Addresses. The default credentials configured will be used while trying to connect to the ESX hosts through the CIM interface. Configuring the default CIM credentials is described in the section ‘Configuring Discovery, CIM credentials and TCP/IP Settings’.

Configuring Discovery, CIM Credentials and TCP/IP Settings

Use the OneCommand Manager application Discovery Settings dialog box to configure several discovery server parameters. You can define when to start the discovery server, when to refresh FC and TCP/IP accessed discoveries and when to remove previously discovered adapters that are no longer being discovered. You can also define default CIM credentials such as the protocol, user name, port number, password and name space. For TCP/IP management, you can specify an IP port number, change an IP port number and enable a port for TCP/IP management.

Note: The number of addresses does not correspond directly to the number of hosts added to the discovery-tree.

For example, some of the addresses discovered may be for hosts that have already been discovered over FC. However, new adapters can be discovered on those hosts that were not discovered over FC. Also, a host can have more than one IP address assigned to it. If multiple IP addresses for a host are discovered during the search, the host will be added to the discovery tree only once. If the same host name appears for more than one host, the adapters of all these hosts will be displayed in the OneCommand Manager as a single host entry.

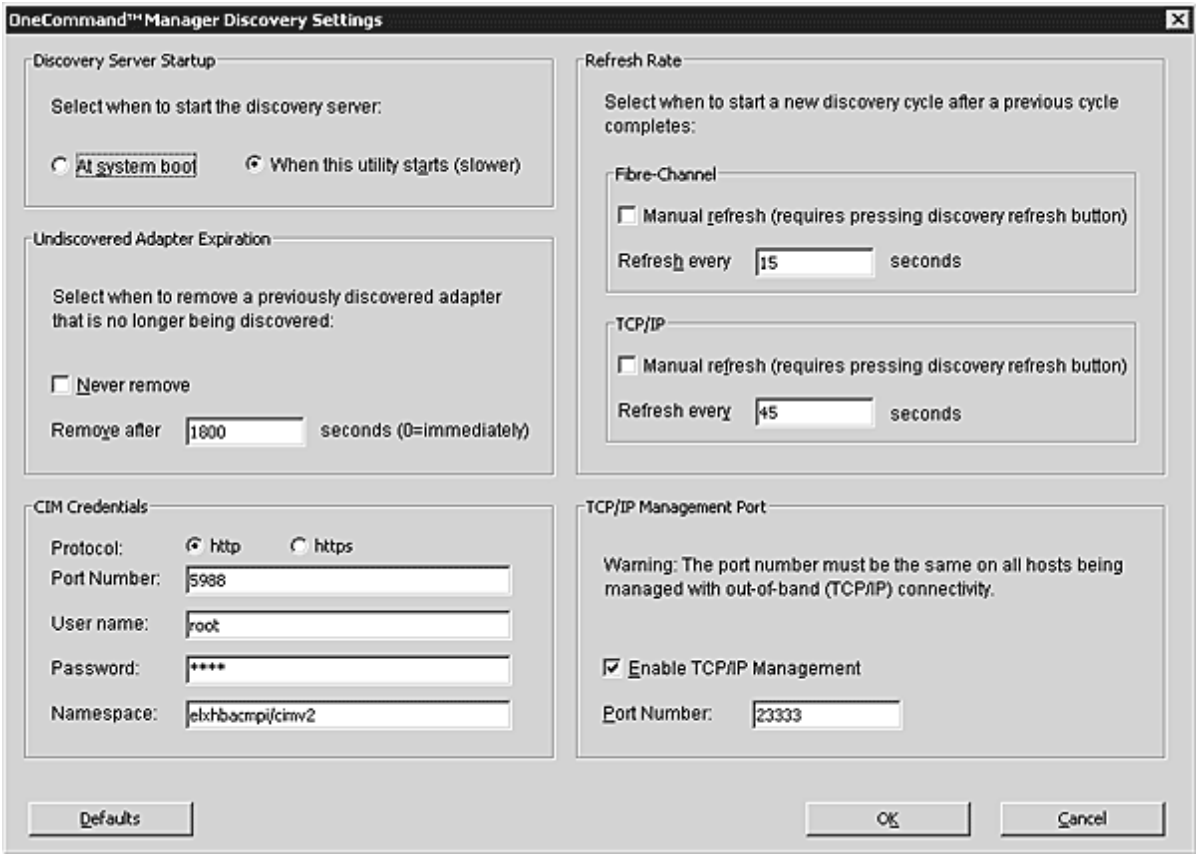

Figure 2: Discovery Settings dialog box

To configure discovery settings:

1. From the Discovery menu, select **Modify Settings**.

   The Discovery Settings dialog box appears.
2. Define the discovery properties you want.
3. If TCP/IP Management is enabled, the Enable TCP/IP Management checkbox is selected and the current port number is displayed in the Port Number field. If desired, enter a different port number (between 1024 and 65535). Click Defaults to select the Enable TCP/IP Management checkbox (if unchecked) and set the port number to 23333. If the port number or the Enable TCP/IP Management checkbox is changed, a set of warning messages may appear before changes are made. Click Yes on the warning message to continue with the change.
4. If the IP port number is changed, the utility restarts the OneCommand Manager Application discovery server and management agent to use the new settings. If the servers cannot be stopped and restarted, you are prompted to reboot the host for the new TCP/IP management settings to take effect.

CAUTION: The IP port number must be the same for all hosts that are to be managed. Setting an IP port number for one host to a different value than the other hosts will make the host unable to manage other hosts over TCP/IP, as well as make the host unmanageable over TCP/IP from other hosts.

5. The CIM credentials group can be used to set the default CIM credentials which will be used by default to connect to all the ESX hosts that are managed through the CIM interface.
   - Protocol: The http or https protocol can be used to connect to the ESX hosts. The default port numbers used for http and https are 5988 and 5989 respectively. The port number will change automatically according to the protocol selected. The user can also manually change the port number. Since, by default, the HTTP is disabled on sfcb in ESXi host, user should use HTTPS to communicate to the ESXi host.
   - User name: The user name field contains the username with which to connect to the ESX hosts. By default this will be ‘root’
   - Password: This password field will contain the password of the user name which will be used to connect to the ESX host.
   - Namespace: Namespace is the namespace of the emulex provider.

     For ESX/ESXi 40 and 41, the namespace is ‘*root/emulex*’.

     For ESX 3.5, the namespace is ‘*elxhbacmpi/cimv2* ’.

Note: If the Emulex CIM Provider present in ESXi / ESX is inbox provider, then the namespace to be used is “elxhbacmpi/cimv2”. If the out-of-box CIM Provider is installed, then the namespace to be used is “root/emulex”.

Table 2, “Namespaces Used for Providers,” lists the namespaces to be used with the inbox providers and the out-of-the-box providers for various versions of ESX/ESXi:

Table 2: Namespaces Used for Providers

	Namespace	
	Inbox Provider	**Out-of-Box Provider**
ESX/ESXi 3.5	elxhbacmpi/cimv2	elxhbacmpi/cimv2
ESX/ESXi4.0	elxhbacmpi/cimv2	root/emulex
ESX/ESXi4.1	elxhbacmpi/cimv2	root/emulex

To check whether the CIM Provider is inbox or out-of-box, enter the following command on the ESX/ESXi host.

```
~ # esxupdate --vib-view query | grep emulex-cim-provider
```

If the provider name is prefixed with `deb`, it is an inbox provider. If the provider name is prefixed with `cross`, it is an out-of-box provider as shown in the following response samples:

```
deb_emulex-cim-provider_410.2.0.32.1-207424
installed     2010-04-01T07:00:00+00:00

cross_emulex-cim provider_410.3.1.16.1235786
installed     2010-10-11T09:39:04.047082+00:00
```

6. Click **OK** to apply your changes. Click **Defaults** to return the discovery properties to their default settings.

How to Set the Default Credentials Using hbacmd

The `hbacmd setcimcred` command can be used to set the default credentials that will be used in all the subsequent CIM management commands if the user does not provide any with those commands. The syntax of this command is given below

```
>hbacmd setcimcred <username> <password> <namespace> <port>
```

For example:

```
>hbacmd setcimcred root pass123 root/emulex 5989
```

The default credentials set by the OneCommand Manager GUI and hbacmd will be shared which means that if a set of default credentials is set by the OneCommand Manager GUI, the same will be used by hbacmd and vice versa.

Commands Using the Default CIM Credentials

Once the default CIM credentials are set using the above command, these default credentials will be used for all the subsequent commands using the CIM interface. To specify that the CIM interface is to be used, the hbacmd commands should be provided with an `m=cim` flag like this example:

```
>hbacmd h=10.11.12.13 m=cim portattributes 10:00:00:00:c9:11:22:33
```

In the preceding example, this requests the port attributes of port `10:00:00:00:c9:11:22:33` which is present in the host with the IP address 10.11.12.13. The default credentials set will be used.

Commands Using the User-Provided CIM Credentials

If the credentials differ from the set default values, or if the credentials are not set at all, the user can provide them, along with the command, like this:

```
>hbacmd h=10.19.20.16 m=cim u=root p=pass4321 n=root/emulex
portattributes 10:00:00:00:c9:cc:dd:ee
```

CIM Provider Versions

The latest CIM Provider released is a bundle of the FC Provider and the UCNA Provider. Table 3, “CIM Provider Versions,” lists the versions of the providers used in each release.

Table 3: CIM Provider Versions

UCNA Version	CIM Provider Version	FC Provider Version	UCNA Provider Version
UCNA 1.1	3.0.28.1	2.2.42.1	1.1.11.1
UCNA 1.2	3.1.17.1	2.2.57.1	1.2.17.1
UCNA 1.3	3.2.16.1	2.2.76.1	1.3.16.1

Troubleshooting

Introduction

There are several circumstances in which your system may operate in an unexpected manner. The Troubleshooting section explains many of these circumstances and offers one or more workarounds for each situation.

FC/FCoE Troubleshooting

General Situations

Table 4. General Driver Situations

Situation	Resolution
Port link fails to come up.	If an FC link fails to come up, verify that an 8 Gb/s adapter is not attempting to connect to a 1 Gb/s device. Only 2, 4 and 8 Gb/s devices are supported on 8 Gb/s adapters. For LP21000 adapters, ensure the adapter is not in maintenance mode and that it is not running the manufacturing firmware. For the OCe10100 family of adapters, ensure that the fabric port is enabled.
The Emulex driver is not loaded and all paths are down.	Use lspci to determine if the Emulex ports are being properly identified. If not, find out if the driver iso was correctly installed. You must have the correct driver for the installed adapter because the device PCI IDs are installed with the driver package. Examine the /var/log/vmkernel file for lpfc820 log messages indicating an error. In this case contact Emulex support.
lpfc driver fails to recognize an adapter and logs "*unknown IOCB*" messages in the system log during driver load. The adapter is running outdated firmware.	Upgrade the adapter firmware to the minimum supported revision (or newer) listed in the installation guide.
System panics when booted with a failed adapter installed.	Remove the failed adapter and reboot.

lpfc Log Messages

Introduction

Log messages have traditionally been organized into logical groups based on code functionality in the FC driver. With the introduction of OneConnect UCNAs by Emulex, that grouping is modified to account for new behaviors. The traditional grouping is maintained, but new messages no longer group together nicely.

The messages provided in this section are unmaskable error conditions. They are automatically added to the system console log.

You can examine the /var/log/vmkernel file to see any of these messages. If you have concerns, the best policy is to execute a vm-support dump and push it to the VMware/Emulex support staff.

Log messages are organized into logical groups based on code functionality within the Fibre Channel driver. Each group consists of a block of 100 log message numbers. Most groups require a single block of 100 message numbers, however some groups (INIT, FCP) require two blocks.

Table 5, the Message Log table, shows the groups and defines the associated number ranges.

Table 5: Message Log Table

LOG Message Verbose Mask Definition	From	To	Verbose Bit	Verbose Description
LOG_ELS	0100	0199	0x1	ELS events
LOG_DISCOVERY	0200	0299	0x2	Link discovery events
LOG_SLI	0300	0399	0x800	SLI events
LOG_MBOX	0300	0339	0x4	Mailbox events
LOG_TEMP	0340	0347	0x100	Temperature sensor events
LOG_INIT	0400	0599	0x8	Initialization events
LOG_FCP	0700	0799	0x40	FCP traffic history
Reserved	0800	0899		
LOG_NODE	0900	0999	0x80	Node table events
Reserved	1000	1099		
Reserved	1100	1199		
LOG_MISC LOG_FCoE	1200	1299	0x400	Miscellaneous and FCoE events
LOG_LINK_EVENT	1300	1399	0x10	Link events
Reserved	1400	1499		
Reserved	1500	1599		
LOG_LIBDFC	1600	1699	0x2000	IOCTL events
LOG_VPORT	1800	1832	0x4000	NPIV events

Table 5: Message Log Table (Continued)

LOG Message Verbose Mask Definition	From	To	Verbose Bit	Verbose Description
FCoE EVENTS	1833	2800	The verbose bit remains with the previous rows.	
LOG_ALL_MSG	0100	2600	0xffffffff	Log all messages

Message Log Example

The following is an example of a LOG message:

```
Jul 2 04:23:34 daffy kernel: lpfc 0000:03:06.0: 0:1305 Link Down
Event x2f2 received Data: x2f2 x20 x110
```

In the above LOG message:

- lpfc 0000:03:06.0: identifies the identifies the PCI location of the particular lpfc hw port.
- 0: identifies Emulex HBA0.
- 1305 identifies the LOG message number.

Note: If the word 'Data:' is present in a LOG message, any information to the right of 'Data:' is intended for Emulex technical support/engineering use only.

Note: Unless otherwise noted in the ACTION: attribute, report these errors to Technical Support. Emulex requests that when reporting occurrences of these error messages, you provide a tarball of all vmkernel files in /var/log.

ELS Events (0100 - 0199)

elx_mes0100: FLOGI failure Status:<status>/<extended_status> TMO:<timeout>

DESCRIPTION: An ELS FLOGI command that was sent to the fabric failed.
DATA: (1) ulpStatus, (2) ulpWord[4], (3) ulpTimeout
ACTION: This error could indicate a fabric configuration error or internal driver issue. If problems persist report these errors to Technical Support.

elx_mes0111: Dropping received ELS cmd

DESCRIPTION: The driver decided to drop an ELS Response ring entry.
DATA: (1) ulpStatus, (2) ulpWord[4], (3) ulpTimeout
ACTION: This error could indicate a software driver or firmware problem. If problems persist report these errors to Technical Support.

elx_mes0113: An FLOGI ELS command <elsCmd> was received from DID <did> in Loop Mode

DESCRIPTION: While in Loop Mode an unknown or unsupported ELS command was received.
DATA: None
ACTION: Check device DID.

elx_mes0115: Unknown ELS command <elsCmd> received from N_Port <did>

DESCRIPTION: Received an unsupported ELS command from a remote N_Port.
DATA: None
ACTION: Check remote N_Port for potential problem.

elx_mes0125: FDISC Failed (x%x). Fabric out of resources

DESCRIPTION: The fabric rejected an FDISC because the switch can not support any more Virtual ports.
DATA: None
ACTION: Reconfigure the switch to support more NPIV logins. If problem persists, contact Technical Support.

elx_mes0126: FDISC failed (ulpStatus/ulpWord[4])\n

DESCRIPTION: The ELS FDISC command has failed.
DATA: None
ACTION: Check the port and switch configuration.

elx_mes0127: ELS timeout

DESCRIPTION: An ELS IOCB command was posted to a ring and did not complete within ULP timeout seconds.
DATA: (1) elscmd, (2) remote_id, (3) ulpcommand, (4) ulpIoTag
ACTION: If no ELS command is going through the adapter, reboot the system; If problem persists, contact Technical Support.

elx_mes0133: PLOGI: no memory for reg_login

DESCRIPTION: Memory allocation error.
DATA: (1) nlp_DID, (2) nlp_state, (3) nlp_flag, (4) nlp_rpi
ACTION: Memory allocation error. Check system resources. Unload unused modules.

elx_mes0134: PLOGI: cannot issue reg_login

DESCRIPTION: The ELS PLOGI mailbox command has failed.
DATA: (1) nlp_DID, (2) nlp_state, (3) nlp_flag, (4) nlp_rpi
ACTION: Check the port and switch configuration.

elx_mes0135: cannot format reg_login

DESCRIPTION: Could not allocate an RPI or DMA buffer for the mailbox command.
DATA: (1) nlp_DID, (2) nlp_state, (3) nlp_flag, (4) nlp_rpi
ACTION: None required.

elx_mes0136: PLOGI completes to N_Port <DID> completion

DESCRIPTION: A PLOGI has completed for which there is no NDLP.
DATA: (1) ulpStatus, (2) ulpWord[4]
ACTION: None required.

elx_mes0137: No retry ELS command <ELS_CMD> to remote

DESCRIPTION:
DATA: (1) ulpStatus, (2) ulpWord[4]
ACTION: None required.

elx_mes0138: ELS rsp: Cannot issue reg_login for <DID>

DESCRIPTION: REG_LOGIN mailbox command failed.
DATA: (1) nlp_DID, (2) nlp_state, (3) nlp_flag, (4) nlp_rpi
ACTION: None required.

elx_mes0139: Ignoring ELS cmd tag <ioTag> completion Data

DESCRIPTION: This ELS command was aborted.
DATA: (1) ulpStatus, (2) ulpWord[4], (3) ulpTimeout
ACTION: None required.

elx_mes0140: PLOGI Reject: invalid nname

DESCRIPTION: Invalid node WWN provided.
DATA: None
ACTION: None required.

elx_mes0141: PLOGI Reject: invalid pname

DESCRIPTION: Invalid port WWN provided.
DATA: None
ACTION: None required.

elx_mes0142: PLOGI RSP: Invalid WWN

DESCRIPTION: The PLOGI sent to the port by a remote port had an invalid WWN.
DATA: None
ACTION: None required.

elx_mes0144: Not a valid WCQE code: <Completion Code>

DESCRIPTION: The completion queue handler detected an invalid type.
DATA: None
ACTION: None required.

elx_mes0147: Failed to allocate memory for RSCN event

DESCRIPTION: Memory could not be allocated to send the RSCN event to the management application
DATA: None
ACTION: None required.

elx_mes0148: Failed to allocate memory for LOGO event

DESCRIPTION: Memory could not be allocated to send the LOGO event to the FC transport.
DATA: None
ACTION: None required.

elx_mes0154: Authentication not complete

DESCRIPTION: Authentication was restarted because the previous authentication did not complete.
DATA: None
ACTION: Check the switch configuration.

Link Discovery Events (0200 - 0299)

elx_mes0200: CONFIG_LINK bad hba state <hba_state>

DESCRIPTION: A CONFIG_LINK mbox command completed and the driver was not in the right state.
DATA: None
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes0203: Devloss timeout on WWPN <address> N_Port <nlp_DID>

DESCRIPTION: A remote N_Port that was discovered by the driver disappeared for more than lpfc_devloss_tmo seconds.
DATA: (1) nlp_flag, (2) nlp_state, (3) nlp_rpi
ACTION: If the device generating this message is not a target to which the adapter is connected, this error does not affect the data integrity of the I/O between the adapter and the attached storage and can be ignored.

elx_mes0206: Device discovery completion error

DESCRIPTION: This indicates that an uncorrectable error was encountered during device (re)discovery after a link up. Fibre Channel devices are not accessible if this message is displayed.
DATA: None
ACTION: Reboot the system. If the problem persists, report the error to Technical Support. Run with verbose mode on for more details.

elx_mes0207: Device <DID> (<WWN>) sent invalid service parameters. Ignoring device.

DESCRIPTION: Invalid service parameters were received from DID. Ignoring this remote port.
DATA: DID, WWN
ACTION: Verify the remote port's configuration. If the problem persists, report the error to Technical Support. Run with verbose mode on for more details.

elx_mes0222: Initial FLOG/FDISKI timeout

DESCRIPTION: The driver sent the initial FLOGI or FDISK to the fabric and never got a response back.
DATA: None
ACTION: Check Fabric configuration. The driver recovers from this and continues with device discovery.

elx_mes0223: Timeout while waiting for NameServer login

DESCRIPTION: Our login request to the NameServer was not acknowledged within RATOV.
DATA: None
ACTION: Check the fabric configuration. The driver recovers from this and continues with device discovery.

elx_mes0224: NameServer Query timeout

DESCRIPTION: Node authentication timeout, node Discovery timeout. A NameServer Query to the Fabric or discovery of reported remote N_Ports is not acknowledged within R_A_TOV.
DATA: (1) fc_ns_retry, (2) fc_max_ns_retry
ACTION: Check Fabric configuration. The driver recovers from this and continues with device discovery.

elx_mes0226: Device discovery completion error

DESCRIPTION: This indicates that an uncorrectable error was encountered during device (re)discovery after a link up. Fibre Channel devices are not accessible if this message is displayed.
DATA: None
ACTION: Reboot the system. If the problem persists, report the error to Technical Support. Run with verbose mode on for more details.

elx_mes0227: Node Authentication timeout

DESCRIPTION: The driver has lost track of what N_Ports are being authenticated.
DATA: None
ACTION: None required. The driver should recover from this event.

elx_mes0228: CLEAR LA timeout

DESCRIPTION: The driver issued a CLEAR_LA that never completed.
DATA: None
ACTION: None required. The driver should recover from this event.

elx_mes0230: Unexpected timeout, hba linkstate <link_state>

DESCRIPTION: Discovery has timed out and the adapter state is not ready.
DATA: None
ACTION: None required.

elx_mes0231: RSCN timeout

DESCRIPTION: The driver has lost track of what N_Ports have RSCNs pending.
DATA: (1) fc_ns_retry, (2) lpfc_max_ns_retry
ACTION: None required. The driver should recover from this event.

elx_mes0233: Nodelist not empty

DESCRIPTION: Driver unloaded or hotplug detected a node still in use.
DATA: None
ACTION: None required.

elx_mes0246: RegLogin failed

DESCRIPTION: The firmware returned a failure for the specified RegLogin.
DATA: (1) Did, (2) mbxStatus, (3) hbaState
ACTION: This message indicates that the firmware could not do RegLogin for the specified Did. There may be a limitation on how many nodes an adapter can see.

elx_mes0249: Cannot issue Register Fabric login: Err <err>

DESCRIPTION: Could not issue the fabric reg login; the err value is unique for each possible failure.
DATA: None
ACTION: None required.

elx_mes0251: NameServer login: no memory

DESCRIPTION: Could not allocate memory for the NDLP structure.
DATA: None
ACTION: None required.

elx_mes0252: Cannot issue NameServer login

DESCRIPTION: Could not issue an ELS PLOGI to the nameserver DID.
DATA: None
ACTION: Check the port connection and switch configuration.

elx_mes0253: Register VPI: Can’t send mbox

DESCRIPTION: Could not issue the REG_LOGIN command for this VPort.
DATA: None
ACTION: None required.

elx_mes0254: Register VPI: no memory" goto mbox_err_exit

DESCRIPTION: Could not allocate memory for the REG_LOGIN mailbox command.

DATA: None
ACTION: None required.

elx_mes0255: Issue FDISC: no IOCB

DESCRIPTION: All of the pre-allocated IOCBs are in use.
DATA: None
ACTION: None required.

elx_mes0256: Issue FDISC: Cannot send IOCB

DESCRIPTION: Unable to send the fabric IOCB.
DATA: None
ACTION: Check the switch configuration.

elx_mes0257: GID_FT Query error: <ulpStatus> <fc_ns_retry>

DESCRIPTION: The GID_FT CT request for the nameserver has failed.
DATA: None
ACTION: Check the switch configuration.

elx_mes0258: Register Fabric login error: <mbxStatus>

DESCRIPTION: The REG_LOGIN for the fabric has failed.
DATA: None
ACTION: Check the port and switch configuration.

elx_mes0259: No NPIVFabric support

DESCRIPTION: The switch to which the port is connected does not support NPIV.
DATA: None
ACTION: Check the switch configuration.

elx_mes0260: Register NameServer error: <mbxStatus>

DESCRIPTION: The REG_LOGIN mailbox command has failed for the nameserver.
DATA: None
ACTION: Check the switch configuration.

elx_mes0261: Cannot Register NameServer login

DESCRIPTION: Either a memory allocation issue or an invalid parameter was sent to the REG_LOGIN.
DATA: None
ACTION: At least one message (0142 0121 0133 0134 0135) should precede this message.

elx_mes0262: No NPIV Fabric support

DESCRIPTION: The switch to which the port is connected does not support NPIV.
DATA: None
ACTION: Check the switch configuration.

elx_mes0263: Discovery Mailbox error: state: <port_state> : <sparam_mbox> <cfglink_mbox>

DESCRIPTION: Either the driver could not allocate resources or it could not send sparam_mbox or cfglink_mbox.
DATA: (1) address of sparam_mbox command, (2) address of cfglink_mbox command.
ACTION: Attempt to unload and reload the driver when it is convenient.

elx_mes0264: No NPIV Fabric support

DESCRIPTION: The switch to which the port is connected does not support NPIV.
DATA: None
ACTION: Check the switch configuration.

elx_mes0266: Issue NameServer Req <cmdcode> err <rc> Data: <fc_flag> <fc_rscn_id_cnt>

DESCRIPTION: The driver was not able to send the nameserver CT command.
DATA: (1) VPorts fc_flag, (2) VPorts fc_rscn_id_cnt
ACTION: Check the switch and port configurations.

elx_mes0267: NameServer GFF Rsp "<did> Error (<ulpStatus> <un.ulpWord[4]>) Data: <fc_flag> <fc_rscn_id_cnt>

DESCRIPTION: The nameServer GFF CT request failed.
DATA: (1) VPorts fc_flag, (2) VPorts fc_rscn_id_cnt
ACTION: Check the switch and port configurations.

elx_mes0268: NS cmd <cmdcode> Error (<ulpStatus> <un.ulpWord[4]>)

DESCRIPTION: The nameServer CT request failed.
DATA: None.
ACTION: Check the switch and port configurations.

elx_mes0271: Illegal State Transition: node <nlp_DID> event <evt>, state <nlp_state> Data:<nlp_rpi> <nlp_flag>

DESCRIPTION: The current node state does not have a handler for this event.
DATA: (1) nlp_rpi, (2) nlp_flag
ACTION: Verify that all targets are still visible to the SCSI mid-layer.

elx_mes0272: Illegal State Transition: node <nlp_DID> event <evt>, state <nlp_state> Data: <nlp_rpi> <nlp_flag>

DESCRIPTION: The driver is completing a PLOGI but do not have the rcv_plogi flag set.
DATA: (1) nlp_rpi, (2) nlp_flag
ACTION: Verify that all targets are still visible to the SCSI mid-layer.

elx_mes0273: Unexpected discovery timeout,vport State <port_state>

DESCRIPTION: The discovery process has timed out.
DATA: None
ACTION: Ensure all targets are visible.

elx_mes0282: did:x%x ndlp:x%pusgmap:x%x refcnt:%d, ndlp->nlp_DID, (void *)ndlp, lpfc_init.c-ndlp->nlp_usg_map,

DESCRIPTION: Driver clean-up has found a node that is still on the node list during driver unload or PCI hotplug removal.
DATA: None.
ACTION: None required.

elx_mes0283: Failed to allocate mbox cmd memory

DESCRIPTION: Mailbox allocation error.
DATA: None

ACTION: None required.

elx_mes0285: Allocated DMA memory size <alloclen> is less than the requested DMA memorysize <reqlen>

DESCRIPTION: Memory allocation was truncated.
DATA: None
ACTION: None required.

elx_mes0286: lpfc_nlp_state_cleanup failed to allocate statistical data buffer <nlp_DID>

DESCRIPTION: Memory allocation failed for node's statistical data.
DATA: None
ACTION: None required.

elx_mes0287: lpfc_alloc_bucket failed to allocate statistical data buffer <nlp_DID>

DESCRIPTION: Memory allocation failed for node's statistical data.
DATA: None
ACTION: None required.

elx_mes0288: Unknown FCoE event type <event_type> event tag <event_tag>

DESCRIPTION: The firmware has detected an unknown FCoE event.
DATA: None
ACTION: Check the FCoE switch configuration and the adapter DCBX mode.

elx_mes0289: Issue Register VFI failed: Err <rc>

DESCRIPTION: The driver could not register the Virtual Fabric Index for the FCFI.
DATA: None
ACTION: Check the switch and port configurations.

elx_mes0290: The SLI4 DCBX asynchronous event is not handled yet

DESCRIPTION: The SLI-4 DCBX asynchronous event is not handled yet.
DATA: None
ACTION: None required.

elx_mes0291: Allocated DMA memory size <alloc_len> is less than the requested DMA memorysize <req_len>

DESCRIPTION: The asynchronous DCBX events are not handled in the driver.
DATA: None
ACTION: Check the switch configuration.

elx_mes0293: PM resume failed to start workerthread: error=<error>

DESCRIPTION: The PCI resume (hotplug) could not start the worker thread for the driver.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0294: PM resume Failed to enable interrupt

DESCRIPTION: The PCI resume (hotplug) could not get an interrupt vector.
DATA: None
ACTION: Unload and reload the driver.

invalid device group <pci_dev_grp>

DESCRIPTION: While unloading the driver, the driver detect a PCI device that it should not have claimed.
DATA: None
ACTION: None required.

elx_mes0299: Invalid SLI revision <sli_rev>

DESCRIPTION: While processing a host attention or unrecoverable error, the driver detected an invalid SLI revision.
DATA: None
ACTION: None required.

Mailbox Events (0300 - 0339)

elx_mes0300: LATT: Cannot issue READ_LA: Data: <rc>

DESCRIPTION: The link attention handler could not issue a READ_LA mailbox command.
DATA: None
ACTION: None required.

elx_mes0303: Ring <ringno> handler: portRspPut <portRspPut> is bigger then rsp ring <portRspMax>

DESCRIPTION: The port rsp ring put index is larger than the size of the rsp ring.
DATA: None
ACTION: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

elx_mes0304: Stray mailbox interrupt, mbxCommand <mbxcommand> mbxStatus <mbxstatus>

DESCRIPTION: Received a mailbox completion interrupt and there are no outstanding mailbox commands.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0306: CONFIG_LINK mbxStatus error <mbxStatus> HBA state <hba_state>

DESCRIPTION: The driver issued a CONFIG_LINK mbox command to the adapter that failed.
DATA: None
ACTION: This error could indicate a firmware or hardware problem. Report these errors to Technical Support.

elx_mes0310: Mailbox command <mbxcommand> timeout

DESCRIPTION: A mailbox command was posted to the adapter and did not complete within 30 seconds.
DATA: (1) hba_state, (2) sli_flag, (3) mbox_active
ACTION: This error could indicate a software driver or firmware problem. If no I/O is going through the adapter, reboot the system. If the problem persists, report the error to Technical Support.

elx_mes0312: Ring <ringno> handler: portRspPut <rspPutInx> is bigger then rsp ring <numRiocb>

DESCRIPTION: The IOCB command rings put pointer is ahead of the get pointer.
DATA: None
ACTION: None required.

elx_mes0315: Ring <ringno> issue: portCmdGet <local_getidx> is bigger then cmd ring <max_cmd_idx>

DESCRIPTION: The port cmd ring get index is greater than the size of cmd ring.
DATA: None
ACTION: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

elx_mes0317: iotag <ulp_IoTag> is out of range: max iotag <max_iotag> wd0 <wd0>

DESCRIPTION: The IoTag in the completed IOCB is out of range.
DATA: None
ACTION: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

elx_mes0318: Failed to allocate IOTAG. last IOTAG is <last_allocated_iotag>

DESCRIPTION: The driver cannot allocate an IoTag. Display the last value used.
DATA: None
ACTION: This message indicates the adapter I/O queue is full. Typically this happens when heavy I/O is running on a low-end (3 digit) adapter. We suggest you upgrade to a higher-end adapter.

elx_mes0319: READ_SPARAM mbxStatus error <mbxStatus> hba state <hba_state>

DESCRIPTION: The driver issued a READ_SPARAM mbox command to the adapter that failed.
DATA: None
ACTION: This error could indicate a firmware or hardware problem. Report these errors to Technical Support.

elx_mes0320: CLEAR_LA mbxStatus error <mbxStatus> hba state <hba_state>

DESCRIPTION: The driver issued a CLEAR_LA mbox command to the adapter that failed.
DATA: None
ACTION: This error could indicate a firmware or hardware problem. Report these errors to Technical Support.

elx_mes0323: Unknown Mailbox command <mbxCommand> Cmpl

DESCRIPTION: A unknown mailbox command completed.
DATA: None
ACTION: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

elx_mes0324: Config port initialization error, mbxCmd <mbxCommand> READ_NVPARM, mbxStatus <mbxStatus>

DESCRIPTION: A read nvparams mailbox command failed during port configuration.
DATA: None
ACTION: This error could indicate a software driver, firmware or hardware problem. Report these errors to Technical Support.

elx_mes0330: IOCB wake NOT set

DESCRIPTION: The completion handler associated with the IOCB was never called.
DATA:(1) timeout, (2) timeleft/jiffies
ACTION: This error could indicate a software driver, firmware or hardware problem. If the problem persists, report the error to Technical Support.

elx_mes0334: Unknown IOCB command

DESCRIPTION: Received an unknown IOCB command completion.
DATA: (1) type, (2) ulpCommand, (3) ulpStatus, (4) ulpIoTag, (5) ulpContext)
ACTION: This error could indicate a software driver or firmware problem. If these problems persist, report these errors to Technical Support.

elx_mes0335: Unknown IOCB command

DESCRIPTION: Received an unknown IOCB command completion.
DATA: (1) ulpCommand, (2) ulpStatus, (3) ulpIoTag, (4) ulpContext)
ACTION: This error could indicate a software driver or firmware problem. If these problems persist, report these errors to Technical Support

elx_mes0340: Adapter temperature is OK now

DESCRIPTION: Adapter temperature has reverted to normal range.
DATA: Temperature in Celsius
ACTION: No action needed, informational.

elx_mes0341: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <un.ulpWord[3]>

DESCRIPTION: There are no more pre-allocated buffers available to handle unsolicited buffers.
DATA: None
ACTION: Ensure this port is not being managed by multiple ports.

elx_mes0342: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <unsli3.sli3Words>

DESCRIPTION: This is a multiple IOCB unsolicited command and sufficient buffer space cannot be allocated for it.
DATA: None
ACTION: None required.

elx_mes0343: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <un.ulpWord[3]>

DESCRIPTION: There are no more pre-allocated buffers available to handle unsolicited buffers.
DATA: None
ACTION: None required.

elx_mes0344: Ring <ringno> Cannot find buffer for an unsolicited iocb tag <unsli3.sli3Words[7]>

DESCRIPTION: There are no more pre-allocated buffers available to handle unsolicited buffers.
DATA: None
ACTION: None required.

elx_mes0345: Resetting board due to mailbox timeout

DESCRIPTION: A mailbox command failed to complete. The driver is resetting the port.
DATA: None

ACTION: If the mailbox command fails again, set the lpfc_log_verbose to LOG_MBOX and retry.

elx_mes0346: Ring <ring number> handler: unexpected ASYNC_STATUS evt_code <evtcode> W0 <hex w0> W1 <hex w1> W2 <hex W2> W3 <hex W3> W4 <hex W4> W5 <hex Z5> W6 <hex W6> W7 <hex W7> W8 <hex W8> W9 <hex W9> W10 <hex W10> W11<hex W11>

DESCRIPTION: The adapter received an asynchronous event that was not a temperature event.
DATA: None
ACTION: None required.

elx_mes0347: Adapter is very hot, please take corrective action

DESCRIPTION: Adapter temperature is above normal range
DATA: Temperature in Celsius
ACTION: Shutdown and remove the adapter. Contact customer support.

elx_mes0348: NameServer login: node freed

DESCRIPTION: The enable mode failed to free up the nameserver login.
DATA: None
ACTION: None required.

elx_mes0349: rc should be MBX_SUCCESS

DESCRIPTION: The next mailbox command on the mailbox queue has failed.
DATA: None
ACTION: None required.

elx_mes0350: rc should have been MBX_BUSY

DESCRIPTION: Attempting to unregister a default RPI from an interrupt context and the mailbox state is not busy.
DATA: None
ACTION: None required.

elx_mes0352: Config MSI mailbox command failed, mbxCmd <u.mb.mbxCommand>, mbxStatus <u.mb.mbxStatus>

DESCRIPTION: The mailbox command sent to the firmware to configure the adapter to use MSI-X has failed.
DATA: None
ACTION: Ensure the hardware platform supports MSI-X.

elx_mes0353: Active Mailbox cleared - mailbox timeout exiting

DESCRIPTION: The mailbox timeout handler has determined that the driver is in the process of completing this mailbox command.
DATA: None
ACTION: None required.

elx_mes0359: Not a valid slow-path completion " event: majorcode=x%x, minorcode=x%x\n", bf_get(lpfc_eqe_major_code, eqe), bf_get(lpfc_eqe_minor_code, eqe));

DESCRIPTION: SLI-4: The EQE is not valid.
DATA: None
ACTION: None required.

elx_mes0360: Unsupported EQ count. <entry_count>

DESCRIPTION: Cannot create an event queue of this size.
DATA: None
ACTION: None required.

elx_mes0361: Unsupported CQ count. <entry_count>

DESCRIPTION: Cannot create a completion queue of this size.
DATA: None
ACTION: None required.

elx_mes0362: Unsupported MQ count. <entry_count>

DESCRIPTION: Cannot create MQ count of this size.
DATA: None
ACTION: None required.

elx_mes0364: Invalid param:

DESCRIPTION: SLI-4: The post SGL function was passed an invalid XRI.
DATA: None
ACTION: None required.

elx_mes0365: Slow-path CQ identifier <cqid> does not exist

DESCRIPTION: The Completion Queue ID passed in the Event Queue entry does not reference a valid completion queue.
DATA: None
ACTION: None required.

elx_mes0366: Not a valid fast-path completion event: majorcode=<major code hex>, minor-code=<minor code hex>

DESCRIPTION: The major or minor code in the Event Queue field is not valid.
DATA: None
ACTION: None required.

elx_mes0367: Fast-path completion queue does not exist

DESCRIPTION: The fast path completion queue referenced by the CQID does not exist.
DATA: None
ACTION: None required.

elx_mes0368: Miss-matched fast-path completion queue identifier: eqcqid=<cqid>, fcpcqid=<queue_id>

DESCRIPTION: The CQID in the event queue entry does not match the fcp_cqid that was passed into the routine.
DATA: None
ACTION: None required.

elx_mes0369: No entry from fast-path completion queue fcpcqid=<queue_id)

DESCRIPTION: There were no completions in the completion queue referenced by fcpcqid.
DATA: None
ACTION: None required.

elx_mes0370: Invalid completion queue type <type>

DESCRIPTION: The event queue entry is not for a mailbox or a work queue entry.
DATA: None
ACTION: None required.

elx_mes0371: No entry from the CQ: identifier <queue_id>, type <type>

DESCRIPTION: There was no completion queue event for this event queue entry.
DATA: None
ACTION: None required.

elx_mes0372: iotag <iotag> is out of range: max iotag (<sli.last_iotag>)

DESCRIPTION: The IOCB lookup cannot be performed because the iocb_tag is out of range.
DATA: None
ACTION: None required.

elx_mes0376: READ_REV Error. SLI Level <sli_rev> FCoE enabled <hba_flag & HBA_FCOE_SUPPORT>

DESCRIPTION: This SLI-4 only adapter setup function was called for a non-SLI-4 device.
DATA: None
ACTION: None required.

elx_mes0377: Error <rc> parsing vpd. Using defaults.

DESCRIPTION: Could not parse the VPD data, so the driver is using the default values.
DATA: None
ACTION: None required.

elx_mes0381: Error <rc> during queue setup.

DESCRIPTION: Could not set up all the queues that driver requires to exchange IOs with the adapter.
DATA: None
ACTION: Reload the driver.

elx_mes0382: READ_SPARAM command failed status <issue status>, mbxStatus <mailbox status>

DESCRIPTION: The READ_SPARAM mailbox command has failed during initialization. The adapter has been set to error state.
DATA: None
ACTION: Take a dump with hbacmd and then try reloading the driver.

elx_mes0384: There is pending active mailbox cmd

DESCRIPTION: The mailbox commands have overlapped. This command should have been added to the mailbox queue.
DATA: None
ACTION: None required.

elx_mes0385: rc should have been MBX_BUSY

DESCRIPTION: The completion handler for REG_LOGIN detected the IMMED_UNREG flag and tried to issue the unreg_login command from an interrupt level. The mailbox status should still be busy.
DATA: None

ACTION: None required.

elx_mes0387: Failed to allocate an iocbq

DESCRIPTION: Failed to get an IOCBQ from the list of available IOCBQs.
DATA: None
ACTION: None required.

elx_mes0388: Not a valid WCQE code: <hex cqe_code>

DESCRIPTION: The event code is invalid. This event is dropped.
DATA: None
ACTION: Ensure the adapter's firmware is current.

elx_mes0391: Error during rpi post operation

DESCRIPTION: The driver was trying to post pages to the firmware to be used to keep target login information and encountered a failure.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0393: Error <rc> during rpi post operation

DESCRIPTION: The driver was trying to post pages to the firmware to keep target login information and encountered a failure.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0394: Failed to allocate CQ_EVENT entry

DESCRIPTION: The asynchronous event handler was not able to allocate an event queue entry to which to transfer the asynchronous event.
DATA: None
ACTION: This could be a V-LINK clear from the switch or a fatal error from the firmware. Perform a dump from the OneCommand Manager application.

elx_mes0395: The mboxq allocation failed

DESCRIPTION: The asynchronous link event handler could not allocate a mailbox command to issue the READ_LA (read link attention) mailbox command.
DATA: None
ACTION: None required.

elx_mes0396: The lpfc_dmabuf allocation failed

DESCRIPTION: The asynchronous link event handler could not allocate a DMA buffer for the mailbox command to issue the READ_LA (read link attention) mailbox command.
DATA: None
ACTION: None required.

elx_mes0397: The mbuf allocation failed

DESCRIPTION: The asynchronous link event handler could not allocate DMA-able memory for the READ_LA mailbox command.
DATA: None
ACTION: None required.

elx_mes0398: Invalid link fault code: < hex link_fault>

DESCRIPTION: The attempt to read the link attention register has returned an unknown value.
DATA: None
ACTION: None required.

elx_mes0399: Invalid link attention type: <hex link_type>

DESCRIPTION: The READ_LA mailbox command has returned an invalid link type.
DATA: None
ACTION: None required.

Initialization Events (0400 - 0599)

elx_mes0400: Phys Attribute Count Exceeded, Max %d, Actual %d

DESCRIPTION: Too many driver configuration parameters have been set. The limit is given as Max.
DATA: (1) Maximum number (2) Actual number
ACTION: Reduce the number of actual parameters.

elx_mes0402: Cannot find virtual addr for buffer tag on ring <ringno>

DESCRIPTION: A DMA buffer is not available for this unsolicited command.
DATA: (1) tag, (2) next, (3) prev, (4) postbufq_cnt
ACTION: None required.

elx_mes0403: lpfc_nodev_tmo attribute cannot be set to <val>, allowed range is [<LPFC_MIN_DEVLOSS_TMO>, <LPFC_MAX_DEVLOSS_TMO>]

DESCRIPTION: Attempt to set the nodev timeout value is outside the range of the devloss timeout range.
DATA: None
ACTION: Set the nodev timeout between the minimum and maximum devloss timeout range.

elx_mes0404: Config Param %s set to x%x

DESCRIPTION: Driver is setting a persistent VPort parameter to a new value
DATA: (1) New value
ACTION: None. This message is notification only.

elx_mes0405: Config Param %s set to x%x

DESCRIPTION: Driver is setting a persistent VPort parameter to a new value.
DATA: (1) New value
ACTION: None. This message is notification only.

elx_mes0406: Adapter maximum temperature exceeded (<temperature>), taking this port offline

DESCRIPTION: The driver has received an error for the adapter indicating that the maximum allowable temperature has been exceeded.
DATA: (1) work_hs, (2) work_status[0], (3) work_status[1]
ACTION: Ensure the server fans are not blocked. Shut down the server if the airflow is restricted.

elx_mes0410: Cannot find virtual addr for mapped buf on ring <ringno>

DESCRIPTION: The driver cannot find the specified buffer in its mapping table. Thus it cannot find the

virtual address needed to access the data.
DATA: (1) phys, (2) next, (3) prev, (4) postbufq_cnt
ACTION: This error could indicate a software driver or firmware problem. If the problem persists report these errors to Technical Support.

elx_mes0423: Vport Attribute Instance Error. Defaulting lpfc_#attr to %d, error value %d, allowed range is [min, max]

DESCRIPTION: A Vport attribute was set out of range. The driver reset the parameter to its default.
DATA: None
ACTION: Set the module parameter between the minimum and maximum values.

elx_mes0424: Vport Attribute Count Exceeded, Max %d, Actual %d

DESCRIPTION: The total number of Vport attributes set exceeded the max allowed.
DATA: None
ACTION: Reduce the number set attributes below max.

elx_mes0425: lpfc_"#attr" attribute cannot be set to %d, allowed range is [min, max]

DESCRIPTION: Driver attribute lpfc_#attr was defined with an out-of-range value.
DATA: None
ACTION: Set the parameter between the minimum and maximum value.

elx_mes0427: Cannot re-enable interrupt after slot reset.

DESCRIPTION: The driver was not able to enable the interrupt after an adapter reset.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0430: PM resume Failed to enable interrupt

DESCRIPTION: The driver’s power management resume function could not enable the interrupt.
DATA: None
ACTION: Perform another PM suspend and resume or adapter reset.

elx_mes0431: Failed to enable interrupt.

DESCRIPTION: The driver failed to start the interrupt.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0433: Wakeup on signal: rc=<rc>

DESCRIPTION: A signal other than the LPFC_DATA_READY was received on the worker thread. DATA: None
ACTION: Unload and reload the driver.

elx_mes0434: PM resume failed to start worker thread: error=<error>.

DESCRIPTION: The driver's power management resume function could not start the worker thread.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0435: Adapter failed to get Option ROM version status <rc>.

DESCRIPTION: The driver could not read the adapter’s option ROM.

DATA: None
ACTION: Reset the adapter. Ensure the adapter's firmware is current.

elx_mes0436: Adapter failed to init, timeout, status reg <status>

DESCRIPTION: The adapter failed during powerup diagnostics after it was reset.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0437: Adapter failed to init, chipset, status reg <status>

DESCRIPTION: The adapter failed during powerup diagnostics after it was reset.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0438: Adapter failed to init, chipset, status reg <status>

DESCRIPTION: The adapter failed during powerup diagnostics after it was reset.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0439: Adapter failed to init, mbxCmd <mbxCommand> READ_REV, mbxStatus <mbxStatus>

DESCRIPTION: Adapter initialization failed when issuing a READ_REV mailbox command.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0440: Adapter failed to init, READ_REV has missing revision information

DESCRIPTION: A firmware revision initialization error was detected.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. Update the firmware. If the problem persists, report the error to Technical Support.

elx_mes0442: Adapter failed to init, mbxCmd <mbxCommand> CONFIG_PORT, mbxStatus <mbxStatus>

DESCRIPTION: Adapter initialization failed when issuing a CONFIG_PORT mailbox command.
DATA: (1) hbainit
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0443: Adapter failed to set maximum DMA length mbxStatus <u.mb.mbxStatus>.

DESCRIPTION: Cannot set the maximum DMA length to reflect cfg_pci_max_read.
DATA: None
ACTION: Set module parameter lpfc_pci_max_read to 512, 1024, 2048, or 4096.

elx_mes0445: Firmware initialization failed.

DESCRIPTION: The driver was unable to initialize the hardware.
DATA: None

ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0446: Adapter failed to init, mbxCmd <mbxCommand> CFG_RING, mbxStatus <mbxStatus>, ring <num>

DESCRIPTION: Adapter initialization failed when issuing a CFG_RING mailbox command.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0448: Adapter failed to init, mbxCmd <mbxCommand> READ_SPARM, mbxStatus <mbxStatus>

DESCRIPTION: Adapter initialization failed when issuing a READ_SPARM mailbox command.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0449: Phys attribute Instance Error. Defaulting to lpfc_#attr to %d. Allowed range is [min, max]

DESCRIPTION: A physical device attribute has an out-of-range value. The driver is correcting it.
DATA: (1) value written, (2) minimum value, (3) maximum value
ACTION: Write the default value.

elx_mes0450: lpfc_%attr attribute cannot be set to%d, allowed range is [%min, %max]

DESCRIPTION: Sysfs attribute value written exceeds attribute range
DATA: (1) attribute name, (2) value written, (3) minimum value, (3) maximum value
ACTION: Write a value within the supported range.

elx_mes0453: Adapter failed to init, mbxCmd <mbxCommand> READ_CONFIG, mbxStatus<mbxStatus>

DESCRIPTION: Adapter initialization failed when issuing a READ_CONFIG mailbox command.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0454: Adapter failed to init, mbxCmd <mbxCommand> INIT_LINK, mbxStatus <mbxStatus>

DESCRIPTION: Adapter initialization failed when issuing an INIT_LINK mailbox command.
DATA: None
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0456: Adapter failed to issue ASYNCEVT_ENABLE mbox status <rc>.

DESCRIPTION: The mailbox command to enable an asynchronous event notification failed.
DATA: None
ACTION: Ensure the adapter firmware is current. Reload the driver.

elx_mes0457: Adapter Hardware Error

DESCRIPTION: The driver received an interrupt indicating a possible hardware problem.

Data: (1) status, (2) status1, (3) status2
ACTION: This error could indicate a hardware or firmware problem. If the problem persists, report the error to Technical Support.

elx_mes0459: Adapter heartbeat failure, taking this port offline.

DESCRIPTION: The Heartbeat mailbox command failed.
DATA: None
ACTION: Ensure the adapter firmware is current. Reload the driver.

elx_mes0472: Unknown PCI error state: x%x

DESCRIPTION: The PCI bus has detected an error.
DATA: (1) state value
ACTION: Driver resets the adapter and attempts recovery. If problem persists, contact Emulex technical support.

elx_mes0474: Unable to allocate memory for issuing "MBOX_CONFIG_MSI command”

DESCRIPTION: Mailbox memory pool allocation error.
DATA: None
ACTION: None required.

elx_mes0475: Not configured for supporting MSI-X cfg_use_msi: <cfg_use_msi>.

DESCRIPTION: The lpfc_use_msi module parameter should have been set to 2.
DATA: None
ACTION: Set module parameter lpfc_use_msi=2.

elx_mes0476: HBA not supporting SLI-3 or later SLI Revision: <sli_rev>.

DESCRIPTION: The adapter does not support SLI-3 or SLI-4.
DATA: None
ACTION: This adapter does not support msi. Set lpfc_use_msi=0.

elx_mes0479: Deferred Adapter Hardware Error

DESCRIPTION: An adapter hardware error was sent to the driver.
DATA: (1) work_hs, (2) work_status[0], (3) work_status[1]
ACTION: Perform a dump using hbacmd.

elx_mes0483: Invalid link-attention link speed: x%x", bf_get(lpfc_acqe_link_speed, acqe_link).

DESCRIPTION: The link speed reported in the link attention interrupt is invalid.
DATA: None
ACTION: Check the switch configuration.

elx_mes0493: SLI_CONFIG_SPECIAL mailbox failed with status <rc>.

DESCRIPTION: Mailbox command failed.
DATA: None
ACTION: Ensure the adapter’s firmware is current. Unload and reload the driver.

elx_mes0494: Unable to allocate memory for issuing "SLI_FUNCTION_RESET mailbox command"

DESCRIPTION: Mailbox memory pool allocation error.

DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0495: SLI_FUNCTION_RESET mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>.

DESCRIPTION: Mailbox command failed.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0496: Failed allocate slow-path EQ

DESCRIPTION: The event queue for the slow path was not allocated.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0497: Failed allocate fast-path EQ

DESCRIPTION: The event queue for the fast path was not allocated.
DATA: None
ACTION: Unload and reload the driver.

elx_mes0499: Failed allocate fast-path FCP CQ (<fcp_cqidx>).

DESCRIPTION: The completion queue event for the fast path could not be allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0500: Failed allocate slow-path mailbox CQ

DESCRIPTION: Failed to allocate slow-path mailbox CQ.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0501: Failed allocate slow-path ELS CQ

DESCRIPTION: Failed to allocate slow-path ELS CQ.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0503: Failed allocate fast-path FCP

DESCRIPTION: Failed to allocate fast-path FCP.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0504: Failed allocate slow-path ELS WQ

DESCRIPTION: Failed to allocate slow-path ELS WQ.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0505: Failed allocate slow-path MQ

DESCRIPTION: Failed to allocate slow-path MQ.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0506: Failed allocate receive HRQ

DESCRIPTION: Failed to allocate receive HRQ.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0507: Failed allocate receive DRQ

DESCRIPTION: Failed to allocate receive DRQ.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0520: Slow-path EQ not allocated

DESCRIPTION: The slow-path EQ is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0521: Failed setup of slow-path EQ rc = 0x%x

DESCRIPTION: The slow-path EQ setup failed with status rc.
DATA: (1) status code
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0522: Fast-path EQ <fcp_eqidx> not allocated

DESCRIPTION: The fast-path EQ is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0523: Failed setup of fast-path EQ <fcp_eqidx>, rc = <rc>

DESCRIPTION: The fast-path EQ setup failed.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0526: Fast-path FCP CQ <fcp_cqidx> not allocated

DESCRIPTION: The fast-path FCP is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0527: Failed setup of fast-path FCP CQ <fcp_cqidx>, rc = <rc>

DESCRIPTION: The fast-path FCP CQ setup failed.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0528: Mailbox CQ not allocated

DESCRIPTION: The mailbox CQ is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0530: ELS CQ not allocated

DESCRIPTION: The ELS CQ is not allocated.
DATA: None

ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0531: 0531 Failed setup of slow-path ELS CQ: rc = 0x%x

DESCRIPTION: The ELS CQ is allocated, but failed initial setup.
DATA: (1) status
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0534: Fast-path FCP WQ <fcp_eqidx> not allocated

DESCRIPTION: The fast-path FCP WQ is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0535: Failed setup of fast-path FCP WQ <fcp_wqidx>, rc = <rc>

DESCRIPTION: The fast-path FCP WQ setup failed.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0536: Slow-path ELS WQ not allocated

DESCRIPTION: The slow-path ELS WQ is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0538: Slow-path MQ not allocated

DESCRIPTION: The slow-path MQ is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0539: Failed setup of slow-path MQ: rc = 0x%x

DESCRIPTION: The slow-path MQ is allocated, but failed initial setup
DATA: (1) status
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0540: Receive Queue not allocated

DESCRIPTION: The Receive Queue is not allocated.
DATA: None
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0541: Failed setup of Receive Queue: rc = 0x%x

DESCRIPTION: The Receive Queue is allocated, but failed setup.
DATA: (1) status
ACTION: The driver fails to load. Contact Emulex Technical Support.

elx_mes0542: lpfc_create_static_vport failed to allocate mailbox memory

DESCRIPTION: Failed to allocate mailbox memory for VPort creation.
DATA: None
ACTION: Static VPorts does not load. Contact Emulex Technical Support.

elx_mes0543: lpfc_create_static_vport failed to allocate vport_info

DESCRIPTION: Failed to allocate VPort_info.
DATA: None
ACTION: Static VPorts does not load. Contact Emulex Technical Support

elx_mes0545: lpfc_create_static_vport bad information header 0x%x 0x%x, le32_to_cpu(vport_info->signature), le32_to_cpu(vport_info->rev) & VPORT_INFO_REV_MASK);

DESCRIPTION: Invalid information header; the signature or revision is invalid.
DATA: None
ACTION: Static VPorts does not load. Contact Emulex Technical Support.

elx_mes0582: Error <rc> during sgl post operation

DESCRIPTION: The SGL post operation failed.
DATA: None
ACTION: None required.

elx_mes0602: Failed to allocate CQ_EVENT entry

DESCRIPTION: Failed to allocate a CQ_EVENT entry.
DATA: None
ACTION: None required.

elx_mes0603: Invalid work queue CQE subtype <subtype>

DESCRIPTION: Invalid work queue CQE.
DATA: None
ACTION: None required.

FCP Traffic History (0700 - 0799)

elx_mes0700: Bus Reset on target <i> failed

DESCRIPTION: The bus reset for the specified target failed.
DATA: None
ACTION: None required.

elx_mes0706: 0706 IOCB Abort failed - outstanding %d failed %d

DESCRIPTION: The driver did not recover all IO following a reset task management command
DATA: (1) outstanding IO count (2) number of unrecovered IO
ACTION: Reset call fails to. ESX tries to recover.

elx_mes0713: SCSI layer issued Device Reset (%d, %d) reset status x%x flush status x%x

DESCRIPTION: A device reset has completed on (tgt, lun). Status values are displayed.
DATA: (1) tgt (2) lun (3) task mgmt status (4) flush status
ACTION: None required.

elx_mes0714: SCSI layer issued bus reset

DESCRIPTION: The SCSI layer is requesting the driver to abort all I/Os to all targets on this adapter.
DATA: (1) ret
ACTION: Check the state of the targets in question.

elx_mes0718: Unable to dma_map single request_buffer: x%x

DESCRIPTION: The driver could not map a single virtual address to a dma address.
DATA: (1) dma mapping error
ACTION: None. The driver fails the IO back to ESX.

elx_mes0721: Device Reset rport failure: rdata <rdata>

DESCRIPTION: The reset of the Rport failed.
DATA: None
ACTION: None required.

elx_mes0724: I/O flush failure for context <cntx> on <tgt:lun> cnt x%x

DESCRIPTION: The I/O flush to the {LUN, TARGET or HOST} has failed.
DATA: (1) cnt of unrecovered IO
ACTION: None required. The reset is retried.

elx_mes0727: TMF <cmd> to TGT <TGT#> LUN <LUN#> failed (<ulpStatus>, <ulpWord[4]>)

DESCRIPTION: The task management command failed.
DATA: None
ACTION: None required. The TMF command gets retried.

elx_mes0748: Abort handler timed out waiting for abort to complete:ret <status> ID <target id>

LUN <lun id> snum <serial number>
DESCRIPTION: The abort handler timed out waiting for abort to complete.
DATA: None
ACTION: None required.

Node Table Events (0900 - 0999)

elx_mes0915: Register VPI failed: <mbxStatus>

DESCRIPTION: Could not register the VPI.
DATA: None
ACTION: None required.

Miscellaneous and FCoE Events (1200 - 1299)

elx_mes1262: Failed to allocate dfc_host

DESCRIPTION: Could not allocate memory the dfc_host_struct.
DATA: None
ACTION: None required.

Link Events (1300 - 1399)

elx_mes1303: Link Up Event <eventTag> received Data: x%x x%x x%x x%x x%x x%x %d

DESCRIPTION: A link up event was received. It is also possible for multiple link events to be received together.
DATA:(1) fc_eventTag, (2) granted_AL_PA, (3) UlnkSpeed, (4) alpa_map[0]

ACTION: If numerous link events are occurring, check the physical connections to the Fibre Channel network.

elx_mes1305: Link Down Event <eventTag> received Data: x%x x%x x%x

DESCRIPTION: A link down event was received.
DATA: (1) fc_eventTag, (2) hba_state, (3) fc_flag
ACTION: If numerous link events are occurring, check the physical connections to the Fibre Channel network.

elx_mes1306: Link Up Event in loop back mode<eventTag> received Data: x%x x%x x%x x%x

DESCRIPTION: Link up notification; configured for loopback.
DATA: (1) fc_eventTag, (2) granted_AL_PA, (3) UlnkSpeed, (4) alpa_map[0]
ACTION: None required.

elx_mes1308: Menlo Maint Mode Link up Event x%x rcvd Data: x%x x%x x%x

DESCRIPTION: Link up notification in Menlo maintenance mode.
DATA: (1) fc_eventTag, (2) port_state, (3) VPort fc_flag
ACTION: None required.

elx_mes1309: Link Down Event x%x received Data x%x x%x x%x

DESCRIPTION: The port generated a link down event to the host.
DATA: (1) fc_eventTag (2)port_state (3) VPort fc_flag
ACTION: None required.

elx_mes1310: Link Up Event npiv not supported in loop topology

DESCRIPTION: Loop topologies are not supported when NPIV is enabled.
DATA: None
ACTION: Put link into Fabric mode.

Reserved (1400 - 1499)

elx_mes1400: Failed to initialize sgl list.

DESCRIPTION: Failed to initialize SGL list during initialization.
DATA: None
ACTION: Reboot the server. If the issue persist, contact technical support.

elx_mes1401: Failed to enable pci device.

DESCRIPTION: Failed to enable PCI device during initialization.
DATA: None
ACTION: Reboot the server. If the issue persist, contact technical support.

elx_mes1402: Failed to set up pci memory space.

DESCRIPTION: PCI initialization failed.
DATA: None
ACTION: Reboot the server. If the issue persist, contact technical support.

elx_mes1403: Failed to set up driver resource.

DESCRIPTION: Driver resource initialization failed.
DATA: None
ACTION: None required.

elx_mes1404: Failed to set up driver resource.

DESCRIPTION: Driver resource initialization failed.
DATA: None
ACTION: None required.

elx_mes1405: Failed to initialize iocb list.

DESCRIPTION: IOCB initialization failed.
DATA: None
ACTION: None required.

elx_mes1406: Failed to set up driver resource.

DESCRIPTION: Initialization failed to set up driver resource.
DATA: None
ACTION: None required.

elx_mes1407: Failed to create scsi host.

DESCRIPTION: Initialization failed to create SCSI host.
DATA: None
ACTION: None required.

elx_mes1408: Failure HBA POST Status: sta_reg=<status reg>, perr=<port error>, sfi=<sfi reg>, nip=<nip reg>, ipc=<ipc reg>, xrom=<xrom>, dl=<dl reg>, pstatus=<port status>

DESCRIPTION: The adapter's power on self test has failed.
DATA: None
ACTION: Make sure the adapter firmware is up to date. Contact the technical support if the issue persists after system reboot.

elx_mes1409: Failed to enable pci device.

DESCRIPTION: Failed to enable PCI device during initialization.
DATA: None
ACTION: None required.

elx_mes1410: Failed to set up pci memory space.

DESCRIPTION: Initialization failed to set up PCI memory space.
DATA: None
ACTION: None required.

elx_mes1411: Failed to set up driver resource.

DESCRIPTION: Initialization failed to set up driver resource.
DATA: None
ACTION: None required.

elx_mes1412: Failed to set up driver resource.

DESCRIPTION: Initialization failed to set up driver resource.
DATA: None
ACTION: None required.

elx_mes1413: Failed to initialize iocb list.

DESCRIPTION: Initialization failed to initialize the IOCB list.
DATA: None
ACTION: None required.

elx_mes1414: Failed to set up driver resource.

DESCRIPTION: Initialization failed to set up driver resource.
DATA: None
ACTION: None required.

elx_mes1415: Failed to create scsi host.

DESCRIPTION: Initialization failed to create SCSI host.
DATA: None
ACTION: None required.

elx_mes1416: Failed to allocate sysfs attr

DESCRIPTION: Initialization failed to sysfs attribute.
DATA: None
ACTION: None required.

elx_mes1418: Invalid HBA PCI-device group: <dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1419: Invalid HBA PCI-device group: <dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1420: Invalid HBA PCI-device group: <dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1421: Failed to set up hba

DESCRIPTION: Initialization failed to set up the adapter.
DATA: None
ACTION: None required.

elx_mes1422: HBA Unrecoverable error: uerr_lo_reg=<ue lo>, uerr_hi_reg=<ue hi>, online0_reg=<Online0>, online1_reg=<Online1>

DESCRIPTION: The adapter has notified the driver that it has encountered an unrecoverable error.

DATA: None
ACTION: A dump from the OneCommand Manager application should be taken. Then, the driver should be unloaded and reloaded.

elx_mes1423: HBA Unrecoverable error: uerr_lo_reg=<ue lo>, uerr_hi_reg=<ue hi>, online0_reg=<Online0>, online1_reg=<Online1>.

DESCRIPTION: The adapter has notified the driver that it has encountered an unrecoverable error.
DATA: None
ACTION: A dump from the OneCommand Manager application should be taken. Then, unload and reload the driver.

elx_mes1424: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1425: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1426: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1427: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1428: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1429: Invalid PCI device group: <pci_dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.
DATA: None
ACTION: None required.

elx_mes1430: Failed to initialize sgl list.

DESCRIPTION: Failed to initialize SGL list.
DATA: None
ACTION: None required.

elx_mes1431: Invalid HBA PCI-device group: <dev_grp>

DESCRIPTION: Invalid adapter PCI-device group detected.

DATA: None
ACTION: None required.

elx_mes1432: Failed to initialize rpi headers.

DESCRIPTION: RPI headers required by the firmware failed to initialize.
DATA: None
ACTION: None required.

elx_mes1476: Failed to allocate sysfs attr.

DESCRIPTION: Failed to allocate sysfs attribute.
DATA: None
ACTION: None required.

elx_mes1477: Failed to set up hba

DESCRIPTION: Failed to set up adapter.
DATA: None
ACTION: None required.

IOCTL Events (1600 - 1699)

None.

VPort Events (1800 - 1832)

elx_mes1800 Could not issue unreg_vpi

DESCRIPTION: Driver attempt to unregister VPI failed
DATA: None
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1802 HBQ <index>: local_hbqGetIdx <index> is > than hbqp->entry_count <count>

DESCRIPTION: An error occurred when processing queue related to an adapter in a particular slot.
DATA: (1) hbqno, (2) local_hbqGetIdx, (3) entry_count
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1803 Bad hbq tag. Data: <tag> <count>

DESCRIPTION: An error occurred when processing queue related tags for an adapter in a particular slot.
DATA: (1) tag, (2) buffer_count
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1804: Invalid asynchronous event code: <evt code>

DESCRIPTION: The asynchronous event code that the firmware passed to the driver is invalid.
DATA: None
ACTION: None required.

elx_mes1805 Adapter failed to init.Data: <command> <status> <queue num>

DESCRIPTION: An error occurred when processing queue related tags for an adapter in a particular slot.
DATA: (1) mbxCommand, (2) mbxStatus, (3) hbaqno
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1806 Mbox <command> failed. No vport.

DESCRIPTION: A mailbox command could not be communicated because there was no VPort associated with the mailbox command.
DATA: (1) mbxCommand
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1807 IOCB <value> failed. No vport

DESCRIPTION: An IOCB command could not be communicated because there was no VPort associated with the mailbox command.
DATA: (1) ulpCommand
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1808 Create VPORT failed: NPIV is not enabled: SLImode <mode>

DESCRIPTION: The driver failed to create a port because the adapter was in wrong mode or was not capable of NPIV.
DATA: (1) sli_rev
ACTION: Load the driver with npiv enabled on an adapter that supports SLI-3.

elx_mes1809 Create VPORT failed: Max VPORTs (<vpi>) exceeded.

DESCRIPTION: The driver failed to create a port because the maximum number of port supported by the driver is exceeded.
DATA: (1) max_vpi
ACTION: No Action. The driver can not create any more VPorts.

elx_mes1810 Create VPORT failed: Cannot get instance number.

DESCRIPTION: The driver failed to allocate resources for an adapter and could not assign an instance number
DATA: None
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1811 Create VPORT failed: vpi x<vpi>

DESCRIPTION: The driver failed to create a port and had to eliminate all its resources.
DATA: (1) vpi
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1812 vport_delete failed: Cannot delete physical host

DESCRIPTION: An attempt to delete a port failed because it was to delete a physical port and not a virtual port. Only VPorts on physical ports can be deleted on an NPIV system.
DATA: None
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1813 Create VPORT failed. Cannot get sparam.

DESCRIPTION: The port could not be created because it could not be initialized possibly due to unavailable resources.
DATA: None
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1814: Mbox <u.mb.mbxCommand> failed, no vport

DESCRIPTION: The VPort field of this mailbox command was not completed.
DATA: None
ACTION: None required.

elx_mes1815 Could not issue unreg_did (default rpis)

DESCRIPTION: Attempt to unregister RPI failed.
DATA: None
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1818 VPort failed init, mbxCmd <mailbox command> READ_SPARM mbxStatus

<mailbox status>, rc = <status>
DESCRIPTION: A pending mailbox command issued to initialize port failed.
DATA: (1) mbxCommand, (2) mbxStatus, (3) rc
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1820 Unable to select SLI-3. Not supported by adapter.

DESCRIPTION: The adapter is not capable of operating in a given mode.
DATA: None
ACTION: This is an informational message. SLI-3 mode is only available on some adapters. Do not attempt to force an adapter to run in SLI mode 3 if that adapter does not support SLI-3 mode. Adapters that do not support SLI-3 are configured to run in SLI-2 mode. Nevertheless, it is recommended to use the auto setting (0).

elx_mes1821 Create VPORT failed. Invalid WWN format

DESCRIPTION: The port could not be created due to an invalid WWNN or WWPN format.
DATA: None
ACTION: Provide a valid WWN when creating VPorts.

elx_mes1822 Invalid <name>: <xx: xx: xx: xx: xx: xx: xx: xx>

DESCRIPTION: An invalid WWN was used when creating a VPort.
DATA: (1) type_name, (2) wwn[1], (3) wwn[3], (3) wwn[5], (4) wwn[7]
ACTION: When creating a VPort you must furnish a valid WWN.

elx_mes1823 Create VPORT failed. Duplicate WWN on HBA.

DESCRIPTION: The port could not be created because it would duplicate an existing WWNN adapter address. The resources for the port had to be discarded.
DATA: None
ACTION: Provide a WWN that is unique.

elx_mes1824 NPIV enabled: Override lpfc_sli_mode parameter (<mode>) to auto(0)

DESCRIPTION: The lpfc_enable_npiv and lpfc_sli_mode driver parameter settings conflict. The adapter must be configured for SLI-3 mode to support NPIV.
DATA: (1) lpfc_sli_mode
ACTION: This is an informational message that indicates that the lpfc_enable_npiv and lpfc_sli_mod parameter settings are not compatible. Resolve the parameter conflict by setting the SLI mode to 0 or 3 or, if SLI-2 mode is required then disable NPIV.

elx_mes1825 Vport Created.

DESCRIPTION: This message is displayed to indicate that a port was created in the system. It is displayed at this level to ensure it is always appears at all log levels.
DATA: None
ACTION: No action, informational.

elx_mes1826 Vport Disabled.

DESCRIPTION: The port had to be disabled in the system.
DATA: None
ACTION: No action, informational.

elx_mes1827 Vport Enabled.

DESCRIPTION: The port had to be enabled after possible recovery from some errors.
DATA: None
ACTION: No action, informational.

elx_mes1828 Vport Deleted.

DESCRIPTION: A VPort was deleted.
DATA: None
ACTION: No action, informational.

elx_mes1829 CT command failed to delete objects on fabric.

DESCRIPTION: A command issued to the fabric to delete an associated resource for an object such as for a port, failed.
DATA: None
ACTION: Software driver error. If this problem persists, report these errors to Technical Support.

elx_mes1830 Signal aborted mbxCmd <command>

DESCRIPTION: A pending mailbox command was aborted because the thread received a signal.
DATA: None
ACTION: The command is retried.

elx_mes1831 Create VPORT Interrupted.

DESCRIPTION: The port creation process was unexpectedly interrupted at a critical time and the operation was unsuccessful.
DATA: None
ACTION: The process was interrupted while creating a VPort. Retry the command.

elx_mes1832: No pending MBOX command to handle.

DESCRIPTION:
DATA: None
ACTION:

ELS Events (1833 - 2800)

elx_mes1835: Vport discovery quiesce failed: state <port_state> fc_flags <fc_flag> wait msecs <jiffies_to_msecs(jiffies - start_time)>

DESCRIPTION: Could not pause discovery on this VPort.
DATA: None
ACTION: None required.

elx_mes1836: Could not issue unreg_login(all_rpis) status <rc>

DESCRIPTION: The unreg_login cannot be issued.
DATA: None
ACTION: None required.

elx_mes1837: vport_delete failed: Cannot delete static vport.

DESCRIPTION: Static VPorts cannot be deleted.
DATA: None
ACTION: None required.

elx_mes1838: Failed to INIT_VPI on vpi <vpi> status <rc>

DESCRIPTION: Failed to INIT_VPI.
DATA: None
ACTION: None required.

elx_mes2000: Failed to allocate mbox for READ_FCF cmd

DESCRIPTION: Failed to allocate mbox for READ_FCF command.
DATA: None
ACTION: None required.

elx_mes2001: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command

DESCRIPTION: Unable to allocate memory for issuing the SLI_CONFIG_SPECIAL mailbox command.
DATA: None
ACTION: None required.

elx_mes2002: Error Could not grow rpi count

DESCRIPTION: An error occurred because the RPI count could not be increased.
DATA: None
ACTION: None required.

elx_mes2005: Unable to deregister pages from HBA: <rc>

DESCRIPTION: The SGL pages could not be unregistered from the firmware.
DATA: None
ACTION: None required.

elx_mes2007: Only Limited Edition cmd Format supported <iocb.ulpCommand>

DESCRIPTION: SLI-4 only supports the Limited Edition command format.
DATA: None

ACTION: None required.

elx_mes2008: Error <rc> posting all rpi headers

DESCRIPTION: The RPI headers could not be posted to the firmware.
DATA: None
ACTION: None required.

elx_mes2009: Failed to allocate mbox for ADD_FCF cmd

DESCRIPTION: Failed to allocate mailbox for ADD_FCF command.
DATA: None
ACTION: None required.

elx_mes2010: Resume RPI Mailbox failed status <status>, mbxStatus <mbx status>.

DESCRIPTION:
DATA: None
ACTION: None required.

elx_mes2011: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command

PTION: Unable to allocate memory for issuing SLI_CONFIG_SPECIAL mailbox command.
DATA: None
ACTION: None required.

elx_mes2012: Mailbox failed , mbxCmd <mbx_cmd> READ_CONFIG, mbxStatus <mbx status>.

DESCRIPTION: The READ_CONFIG mailbox command failed.
DATA: None
ACTION: None required.

elx_mes2013: Could not manually add FCF record 0, status <rc>

DESCRIPTION: Could not add FCF record to the FCF list.
DATA: None
ACTION: None required.

elx_mes2014: Invalid command <iocb.ulpCommand>

DESCRIPTION: The IOCB command is invalid.
DATA: None
ACTION: None required.

elx_mes2015: Invalid CT %x command <iocb.ulpCommand>

DESCRIPTION: Invalid Command-Type in the IOCB is not supported.
DATA: None
ACTION: None required.

elx_mes2017: REG_FCFI mbxStatus error <mbx status> HBA state <port_state>.

DESCRIPTION: The REG_FCFI mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2018: REG_VFI mbxStatus error <mbx status> HBA state <port_state>.

DESCRIPTION: The REG_VFI mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2020: Failed to allocate mbox for ADD_FCF cmd

DESCRIPTION: Failed to allocate mailbox for ADD_FCF command.
DATA: None
ACTION: None required.

elx_mes2022: INIT VPI Mailbox failed status <status>, mbxStatus <mbxStatus>

DESCRIPTION: The INIT VPI mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2401: Failed to allocate memory for ELS XRI management array of size <els_xri_cnt>.

DESCRIPTION: Initialization failed to allocate memory for the ELS XRI management array.
DATA: None
ACTION: None required.

elx_mes2500: EQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the event queue has failed.
DATA: None
ACTION: None required.

elx_mes2501: CQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the completion queue has failed.
DATA: None
ACTION: None required.

elx_mes2502: MQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the mailbox queue has failed.
DATA: None
ACTION: None required.

elx_mes2503: WQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the work queue has failed.
DATA: None
ACTION: None required.

elx_mes2504: RQ_CREATE mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to create the receive queue has failed.
DATA: None

ACTION: None required.

elx_mes2505: EQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the event queue has failed.
DATA: None
ACTION: None required.
Preliminary - Second Review

elx_mes2506: CQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the completion queue has failed.
DATA: None
ACTION: None required.

elx_mes2507: MQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the mailbox queue has failed.
DATA: None
ACTION: None required.

elx_mes2508: WQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the work queue has failed.
DATA: None
ACTION: None required.

elx_mes2509: RQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the receive queue has failed.
DATA: None
ACTION: None required.

elx_mes2510: RQ_DESTROY mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the receive queue has failed.
DATA: None
ACTION: None required.

elx_mes2511: POST_SGL mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to post the SGL pages to the firmware has failed.
DATA: None
ACTION: None required.

elx_mes2512: REMOVE_ALL_SGL_PAGES mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to delete the SGL pages from the firmware has failed.

DATA: None
ACTION: None required.

elx_mes2513: POST_SGL_BLOCK mailbox command failed status <shdr_status> add_status <shdr_add_status> mbx status <rc>

DESCRIPTION: The mailbox command sent to post the SGL pages to the firmware has failed.
DATA: None
ACTION: None required.

elx_mes2514: POST_RPI_HDR mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx status <rc>

DESCRIPTION: The mailbox command sent to post the RPUI header pages to the firmware has failed.
DATA: None
ACTION: None required.

elx_mes2515: ADD_FCF_RECORD mailbox failed with status <rc>

DESCRIPTION: The mailbox command to add the FCF record has failed.
DATA: None
ACTION: None required.

elx_mes2516: DEL FCF of default FCF Index failed mbx status <rc>, status <shdr_status> d_status<shdr_add_status>

DESCRIPTION: The mailbox command to delete the FCF record has failed.
DATA: None
ACTION: None required.

elx_mes2517: Unregister FCFI command failed status %d, mbxStatus x%x", rc, bf_get(lpfc_mqe_status, &mbox->u.mqe).

DESCRIPTION: The driver was unable to unregister the FCFI from the firmware.
DATA: None
ACTION: None required.

elx_mes2519: Unable to allocate memory for issuing NOP mailbox command

DESCRIPTION: Memory allocation for this mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2521: READ_FCF_RECORD mailbox failed with status <shdr_status> add_status <shdr_add_status>, mbx

DESCRIPTION: The READ_FCF_RECORD mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2523: Allocated DMA memory size (<alloc_len>) is less than the requested DMA memory size (<req_len>)

DESCRIPTION: The ADD_FCF_RECORD mailbox command failed to retrieve the length required from the firmware.
DATA: None
ACTION: None required.

elx_mes2524: Failed to get the non-embedded SGE virtual address

DESCRIPTION: The READ_FCF_RECORD mailbox command could not retrieve the Scatter Gather Entry that was requested.
DATA: None
ACTION: None required.

elx_mes2527: Failed to allocate non-embedded SGE array.

DESCRIPTION: Failed to allocate the non-embedded SGE array.
DATA: None
ACTION: None required.

elx_mes2528: Mailbox command <vpi> cannot issue

DESCRIPTION: The mailbox command could not be issued because the mailbox interrupt is disabled.
DATA: (1) mbxCommand, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2529: Mailbox command <vpi> cannot issue

DESCRIPTION:
DATA: (1) mbxCommand, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2530: Mailbox command <vpi> cannot issue

DESCRIPTION: The SLI layer in the driver is inactive.
DATA: (1) mb.mbxCommand, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2531: Mailbox command <cpi> cannot issue

DESCRIPTION:
DATA: (1) mb.mbxCommand, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2532: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: The mailbox bootstrap code detected that the SLI layer is active.
DATA: (1) sli4_mbox_opcode, (2) sli_flag, (3) MBX_POLL
ACTION: None required.

elx_mes2533: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION:
DATA: (1) sli4_mbox_opcode, (2) sli_flag, (3) MBX_NOWAIT
ACTION: None required.

elx_mes2535: Unsupported RQ count. (<entry_count>).

DESCRIPTION: The receive queue ring can only be 512, 1024, 2048, or 4096.
DATA: None
ACTION: None required.

elx_mes2536: Unsupported RQ count. (<entry_count>).

DESCRIPTION: The receive queue ring can only be 512, 1024, 2048, or 4096.

DATA: None
ACTION: None required.

elx_mes2537: Receive Frame Truncated!

DESCRIPTION: The receive unsolicited handler detected a truncated frame.
DATA: None
ACTION: None required.

elx_mes2541: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION:
DATA: (1) sli4_mbx_opcode, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2543: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: The mailbox command does not have all of the fields set correctly.
DATA: (1) sli4_mbx_opcode, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2544: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: The adapter cannot be accessed on the PCI bus.
DATA: (1) sli4_mbx_opcode, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2546: New FCF found index <index> tag <event_tag>

DESCRIPTION: A new FCF has been found.
DATA: None
ACTION: None required.

elx_mes2547: Read FCF record failed

DESCRIPTION: Could not read the FCF record from the firmware.
DATA: None
ACTION: None required.

elx_mes2548: FCF Table full count <count> tag <event_tag>

DESCRIPTION: The FCF table is full.
DATA: None
ACTION: None required.

elx_mes2549: FCF disconnected from network index <index> tag <event_tag>.

DESCRIPTION: The FCF has disconnected from the network.
DATA: None
ACTION: None required.

elx_mes2550: UNREG_FCFI mbxStatus error <u.mb.mbxStatus> HBA state <port_state>.

DESCRIPTION: The unregistered FCFI has failed.
DATA: None
ACTION: None required.

elx_mes2551: UNREG_FCFI mbox allocation failed HBA state <port_state>.

DESCRIPTION: The allocation for the UNREG_FCFI mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2552: UNREG_FCFI issue mbox failed rc <rc> HBA state <port_state>.

DESCRIPTION: The unregister FCFI mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2553: lpfc_unregister_unused_fcf failed to read FCF record HBA state.

DESCRIPTION:
DATA: None
ACTION: None required.

elx_mes2554: Could not allocate memory for fcf record

DESCRIPTION:
DATA: None
ACTION: None required.

elx_mes2555: UNREG_VFI mbxStatus error <u.mb.mbxStatus> HBA state <port_state>

DESCRIPTION: The unregister VFI mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2556: UNREG_VFI mbox allocation failed HBA state <port_state>

DESCRIPTION: Could not allocate memory for UNREG_VFI mailbox command.
DATA: None
ACTION: None required.

elx_mes2557 UNREG_VFI issue mbox failed rc <rc> HBA state <port_state>

DESCRIPTION: Could not issue the UNREG_VFI mailbox command.
DATA: None
ACTION: None required.

elx_mes2558: ADD_FCF_RECORD mailbox failed with status<shdr_status> add_status <shdr_add_status>

DESCRIPTION: The ADD_FCF_RECORD mailbox command has failed.
DATA: None
ACTION: None required.

elx_mes2560: Failed to allocate mbox cmd memory

DESCRIPTION: Failed to allocate mailbox command memory.
DATA: None
ACTION: None required.

elx_mes2561: Allocated DMA memory size (<alloclen>) is less than the requested DMA memory size (<reqlen>)

DESCRIPTION: Could not get the memory required for the number of XRIs that are attempting to be posted.
DATA: None
ACTION: None required.

elx_mes2562: No room left for SCSI XRI allocation: max_xri=<sli4_hba.max_cfg_param.max_xri>, els_xri=<els_xri_cnt>

DESCRIPTION: The number of allocated XRIs has reached the max_xri value.
DATA: None
ACTION: None required.

elx_mes2563: Failed to allocate memory for SCSI XRI management array of size <sli4_hba.scsi_xri_max>.

DESCRIPTION: Initialization could not allocate memory to hold the XRIs.
DATA: None
ACTION: None required.

elx_mes2564: POST_SGL_BLOCK mailbox command failed status <shdr_status> add_status <shdr_add_status> mbx status <rc>

DESCRIPTION: The list of XRI SGEs failed to be registered with the firmware.
DATA: None
ACTION: None required.

elx_mes2566: Failed to allocate connection table entry

DESCRIPTION: Failed to allocate connection table entry.
DATA: None
ACTION: None required.

elx_mes2567: Config region 23 has bad signature

DESCRIPTION: Configuration region 23 has an invalid signature.
DATA: None
ACTION: None required.

elx_mes2568: Config region 23 has bad version

DESCRIPTION: Configuration region 23 has an invalid version.
DATA: None
ACTION: None required.

elx_mes2570: Failed to read FCoE parameters

DESCRIPTION: Failed to read the FCoE parameters.
DATA: None
ACTION: None required.

elx_mes2572: Failed allocate memory for fast-path per-EQ handle array

DESCRIPTION: Failed to allocate memory for the fast-path per-EQ handle array.
DATA: None

ACTION: None required.

elx_mes2573: Failed allocate memory for msi-x interrupt vector entries

DESCRIPTION: Failed to allocate memory for MSI-X interrupt vector entries.
DATA: None
ACTION: None required.

elx_mes2574: Not enough EQs (<sli4_hba.max_cfg_param.max_eq>) from the pci function for supporting FCP EQs (<cfg_fcp_eq_count>)

DESCRIPTION: Failed to create the minimum fast-path event queues.
DATA: None
ACTION:

elx_mes2576: Failed allocate memory for fast-path EQ record array

DESCRIPTION: Failed to allocate memory for the fast-path EQ record array.
DATA: None
ACTION: None required.

elx_mes2577: Failed allocate memory for fast-path CQ record array

DESCRIPTION: Failed to allocate memory for the fast-path CQ record array.
DATA: None
ACTION: None required.

elx_mes2578: Failed allocate memory for fast-path WQ record array

DESCRIPTION: Failed to allocate memory for the fast-path WQ record array.
DATA: None
ACTION: None required.

elx_mes2581: Not enough WQs (<sli4_hba.max_cfg_param.max_wq>) from the pci function for supporting FCP WQs (<cfg_fcp_wq_count>)

DESCRIPTION: The driver was not configured with the minimum number of fast-path work queues.
DATA: None
ACTION: None required.

elx_mes2597: Mailbox command <vpi> (<mbxCommand>) cannot issue

DESCRIPTION: Synchronous mailbox command failed after blocking asynchronous mailbox commands.
DATA: (1) sli4_mbx_opcode, (2) sli_flag, (3) flag
ACTION: None required.

elx_mes2598: Adapter Link is disabled.

DESCRIPTION: The adapter link is disabled.
DATA: None
ACTION: None required.

elx_mes2599: Adapter failed to issue DOWN_LINK mbox command rc <rc>.

DESCRIPTION: The adapter failed to issue a DOWN_LINK mailbox command.
DATA: None
ACTION: None required.

elx_mes2600: lpfc_sli_read_serdes_param failed to allocate mailbox memory

DESCRIPTION: Failed to allocate mailbox memory.
DATA: None
ACTION: None required.

elx_mes2605: lpfc_dump_static_vport: memory allocation failed

DESCRIPTION: Memory allocation failed.
DATA: None
ACTION: None required.

elx_mes2606: No NPIV Fabric support

DESCRIPTION: No NPIV Fabric support.
DATA: None
ACTION: None required.

elx_mes2607: Failed to allocate init_vpi mailbox

DESCRIPTION: Failed to allocate init_vpi mailbox.
DATA: None
ACTION: None required.

elx_mes2608: Failed to issue init_vpi mailbox

DESCRIPTION: Failed to issue init_vpi mailbox.
DATA: None
ACTION: None required.

elx_mes2609: Init VPI mailbox failed <u.mb.mbxStatus>

DESCRIPTION: Initialization of VPI mailbox has failed.
DATA: None
ACTION: None required.

elx_mes2610: HBA FCF index goes beyond driver's resource dimension.

DESCRIPTION: During updating the round robin FCF bmask, the FCF index goes beyond the driver's internal resource dimension.
DATA: None
ACTION: None required.

elx_mes2611: UNREG_FCFI issue mbox failed

DESCRIPTION: Could not issue the UNREG_FCFI mailbox command.
DATA: None
ACTION: None required.

elx_mes2619: Config region 23 has bad signature

DESCRIPTION: Configuration region 23 has an invalid signature.
DATA: None
ACTION: None required.

elx_mes2620: Config region 23 has bad version

DESCRIPTION: Configuration region 23 has an invalid version.

DATA: None
ACTION: None required.

elx_mes2621: Failed to allocate mbox for query firmware config cmd

DESCRIPTION: Failed to allocate mailbox memory.
DATA: None
ACTION: None required.

elx_mes2622: Query Firmware Config failed mbx status <rc>, status <shdr_status> add_status <shdr_add_status>

DESCRIPTION: Could not read the firmware configuration.
DATA: None
ACTION: None required.

elx_mes2623: FCoE Function not supported by firmware. Function mode = <function_mode>

DESCRIPTION: FCoE is not supported by this firmware.
DATA: None
ACTION: Use the OneCommand Manager application to update to the latest firmware.

elx_mes2707: Ring <Ring#> handler: Failed to allocate iocb Rctl <fh_rctl> Type <fh_type> received

DESCRIPTION: Could not allocate an IOCB with which to associate this received frame.
DATA: None
ACTION: None required.

elx_mes2718: Clear Virtual Link Received for VPI <index> tag <event_tag>

DESCRIPTION: A Clear virtual link was received from the Fabric for this VPI.
DATA: None
ACTION: None required.

elx_mes2719: Invalid response length: tgt <TGT_ID> lun <LUN> cmnd <CMD> rsplen <RSPLEN>

DESCRIPTION: The response length for this FCP command is not supported.
DATA: None
ACTION: None required.

elx_mes2726: READ_FCF_RECORD Indicates empty FCF table

DESCRIPTION: The driver requested the firmware provide a list of FCF entries to connect to and the firmware responded that the FCF table is empty.
DATA: None
ACTION: None required.

elx_mes2731: Cannot find fabric controller node.

DESCRIPTION: Driver not able to find Fabric controller node in its data base.
DATA: None
ACTION: None required

elx_mes2732: Failed to issue INIT_VPI mailbox command.

DESCRIPTION: The driver wanted to send a INIT_VPI mailbox command to initialize a VPort, but failed to send the mailbox command due to state of the adapter.
DATA: None
ACTION: None required

elx_mes2746: Failed FCF rediscover mailbox command failure.

DESCRIPTION: The adapter returned failure on FCF rediscover mailbox command.
DATA: None
ACTION: None required

elx_mes2747: Failed to issue read FCF record mailbox command.

DESCRIPTION: The driver wanted to send a read FCF record mailbox command to start fast FCF failover FCF scan, but failed to send the mailbox command due
to state of the adapter.
DATA: None
ACTION: None required

elx_mes2751: Adapter failed to restart, status reg <status>,FW Data: A8 <0xA8> AC <0xAC>

DESCRIPTION: The adapter has failed to restart.
DATA: None
ACTION: If the problem persists, report the error to Technical Support.

elx_mes2752: KILL_BOARD command failed retval <retval>

DESCRIPTION: The KILL BOARD mailbox command failed to complete.
DATA: None
ACTION: If the problem persists, report the error to Technical Support.

elx_mes2753: PLOGI failure DID:<DID> Status:<Status>/<Extended Status>.

DESCRIPTION: A PLOGI to <DID> was failed either by the driver, firmware, or target. The <status> and <extended status> indicates why the PLOGI failed.
DATA: None
ACTION: If the problem persists, report the error to Technical Support.

elx_mes2754: PRLI failure DID:<DID> Status:<Status>/<Extended Status>.

DESCRIPTION: A PRLI to <DID> was failed either by the driver, firmware, or target. The <status> and <extended status> indicates why the PRLI failed.
DATA: None
ACTION: If the problem persists, report the error to Technical Support.

elx_mes2755: ADISC failure DID:<DID> Status:<Status>/<Extended Status>.

DESCRIPTION: A ADISC to <DID> was failed either by the driver, firmware, or target. The <status> and <extended status> indicates why the ADISC failed.
DATA: None
ACTION: If the problem persists, report the error to Technical Support.

elx_mes2756: LOGO failure DID:<DID> Status:<Status>/<Extended Status>.

DESCRIPTION: A LOGO to <DID> was failed either by the driver, firmware, or target. The <status> and

<extended status> indicates why the LOGO failed.
DATA: None
ACTION: If the problem persists, report the error to Technical Support.

elx_mes2757: Protocol failure detected during processing of FCP I/O op: tgt <tgt ID> lun <LUN> cmnd <CMD> rspInfo3 <rspInfo3>

DESCRIPTION: The FCP response from a target indicated that the response length is valid, but rspInfo3 indicates that there is no Failure. This is a FCP spec violation by the target.
DATA: None
ACTION: If the problem persists, report the error to Technical Support.

elx_mes2758: Failed to allocate mempool for read FCF record mbox command.

DESCRIPTION: The driver failed to allocate memory from the mempool for issuing FCF read mailbox command during the round robin FCF bmask update.
DATA: None
ACTION: None required

elx_mes2759: Failed to allocate memory for round robin FCF failover bmask.

DESCRIPTION: The driver failed to allocate memory for the round robin FCF failover bmask.
DATA: None
ACTION: Make sure system has enough kernel memory, might need to reload the driver after memory problem resolved.

elx_mes2762: HBA reported FCF index go beyond driver bmask dimension.

DESCRIPTION: Adapter reports an FCF record index goes beyond the driver's internal resource dimension for the bmask.
DATA: None
ACTION: Inform Emulex about this.

elx_mes2763: Failed to allocate mempool for read FCF record mbox command.

DESCRIPTION: The driver failed to allocate memory from the mempool for issuing an FCF read mailbox command during the round robin FCF failover.
DATA: None
ACTION: None required

elx_mes2772: Failed to issue FCF rediscovery mailbox command due to dead FCF.

DESCRIPTION: The driver wanted to send an FCF rediscovery mailbox command to start fast FCF failover due to a dead FCF asynchronous event, but failed to send the mailbox command due to state of the adapter.
DATA: None
ACTION: None required

elx_mes2774: Failed to issue FCF rediscovery mailbox command due to CVL.

DESCRIPTION: The driver wanted to send an FCF rediscovery mailbox command to start fast FCF failover due to a Clear Virtual Link asynchronous event, but failed to send the mailbox command due to state of the adapter.
DATA: None
ACTION: None required

New Events

elx_mes2796: Mailbox memory allocation failed
DESCRIPTION: The driver failed to get memory resources to release an RPI
DATA: None.
ACTION: None. The driver's heap is exhausted. A server reboot is required to fix the exhaustion. Contact technical support if the problem persists.

elx_mes2798: Unreg_vpi failed vpi 0x%x, mb status = 0x%x
DESCRIPTION: The driver attempted to unregister a virtual port index and failed. The failure status is printed.
DATA: None.
ACTION: This condition is not catastrophic, but is unexpected. If problems persist, contact technical support.

elx_mes2813: Mgmt IO is Blocked %x - mbox cmd %x still active.
DESCRIPTION: The HBA's management interface is marked as blocked in preparation for an online or offline state transition. All user space access to the HBA via libdfc interface will be blocked.
DATA: None.
ACTION: None. Notification of a run-state change only.

elx_mes2822: IOCB failed %s iotag 0x%x xri 0x%x
DESCRIPTION: The driver is attempting to drain an internal queue and failed. The failure reason and some state variables are written to the console.
DATA: None
ACTION: None required. This should be a transient condition. If not, please contact technical support.

elx_mes2823: txq empty and txq_cnt is %d
DESCRIPTION: The driver has detected a discrepancy between the elements queued to the txq and the counter tracking the number or items.
DATA: None
ACTION: None required. There is nothing for the driver to do except correct the counter - the txq is empty.

elx_mes2824: Cannot re-enable interrupt after slot reset.
DESCRIPTION: The driver failed to re-enable interrupts following a PCI slot reset command.
DATA: None
ACTION: A system reboot may be required to fully recover. Contact technical support if problems persist.

elx_mes2825: Unknown PCI error state: x%x\n", state
DESCRIPTION: The driver writes this message to the console when the PCI subsystem has detected an error on an Emulex port and called the driver. The driver reacts by resetting the port.
DATA: None
ACTION: None required. The driver resets the device in an attempt to recover. Contact technical support if problems persist.

elx_mes2826: PCI channel disable preparing for reset
DESCRIPTION: The driver writes this message to the console when it is preparing the port for a reset operation.
DATA: None
ACTION: None required. This message is notification of a corrective measure. Contact technical support if problems persist.

elx_mes2827: PCI channel permanent disable for failure
DESCRIPTION: The driver writes this message to the console when a recovery mechanism has failed and the driver wants to mark the port with a permanent failure.
DATA: None
ACTION: A system reboot may correct the failure. If not, contact technical support.

elx_mes2828: PCI channel I/O abort preparing for recovery
DESCRIPTION: The driver writes this message to the console when it is preparing the port for a recovery operation.
DATA: None
ACTION: None required. This is a notification message for the recovery action.

elx_mes2831: FLOGI response with cleared Fabric bit fcf_index 0x%x
Switch Name %02x%02x%02x%02x%02x%02x%02x%02x
Fabric Name %02x%02x%02x%02x%02x%02x%02x%02x
DESCRIPTION: When the driver completed a FLOGI, the common service parameters did not indicate an FPort or NPort remote node. The driver treats this as an error.
DATA: None
ACTION: Validate the external cable connection and FPort/Nport configuration. Contact technical support if problems persist.

elx_mes2858: FLOGI failure Status:x%x/x%x TMO:x%x
DESCRIPTION: The driver issued a FLOGI, but never received any completion with the timeout period. The driver is marking the FLOGI as failed and stops discovery.
DATA: None
ACTION: Please check your fabric to ensure it it operating correctly. Contact technical support if problems persist.

elx_mes2862: FCF (x%x) matches property of in-use FCF (x%x)
DESCRIPTION: The driver has found an FCF record that matches the properties of the current FCF record, except for the VLAN id and Index. The driver will attempt to use this FCF.
DATA: None
ACTION: None required. The driver is in its FCF discovery phase and is trying to recover a match to its in-use FCF.

elx_mes2863 New FCF (x%x) matches property of in-use FCF (x%x)
DESCRIPTION: The driver has found a new FCF record that matches the properties of the current FCF

record, but the record instance numbers don't match.
DATA: None
ACTION: None required. The driver is in its FCF discovery phase and is trying to recover a match to its in-use FCF.

NIC Troubleshooting

The following section includes NIC troubleshooting information. Be sure to check the readme.txt file located on CD1 for other troubleshooting issues.

The following table provides ESX Server NIC troubleshooting information for the OneConnect UCNA.

Table 6: ESX Server NIC

Problem	Answer/Solution

1. When there is a great deal of network traffic in some VMs, a few VMs appear to have lost network connectivity.
2. A lot of "alloc_skb() failed" messages appear in the log file: /proc/vmware/log
	This could be due to low configured value for netPktHeapMaxSize. Try increasing it to a higher value. To read the current value, run:
	`# esxcfg-advcfg -j netPktHeapMaxSize`
	(A value of 0 indicates default - 64MB) To increase the size to (for example, 128 MB), run:
	`# esxcfg-advcfg -k 128 netPktHeapMaxSize`
	(netPktHeapMaxSize can also be configured through VI Client using **Configuration** > **Advanced Settings** > **VMKernel.**) After configuring the size, reboot the system.

Unable to ping from one VM to another VM.	OneConnect driver creates two vmnic interfaces - one for each port. If these interfaces are configured as uplinks in two separate vSwitches, the VMs in each of these switches are in separate networks with no network path between them. Thus, pinging between the VMs in the two groups fails. If you want all these VMs in the same network, configure them as teaming uplinks to one vSwitch option. Each of the vmnics, vmnic1 to vmnic16, must be configured in a separate vSwitch. In this configuration, there is no network path between the vSwitches and pinging between these VMs does not work.
When inserting or removing a 1Gb SFP-RJ45 module on a OneConnect adapter without RJ45 copper cables attached, the operating system indicates link up or down status. When inserting or removing copper cables attached to a switch to the module, link up or down events are not reported to the operating system.	There is no solution to this issue as the link status is not reported due to a PHY limitation on the card.
Flow control setting is not stored per port after rebooting the system.	With flow control, there is no persistence across reboot. It always starts with both RX and TX on. For persistence, run a config command from an RC file at reboot.

NIC Event/Error Logging

Retrieving ESX Server NIC Error Log Codes

For ESX Server systems, the NIC OneConnect (be2net) driver generates error codes to the /var/log/vmkernel log file. The vmkernel log file is an ASCII text file and can be viewed and searched with a text editor such as vi. The vmkernel log file is automatically rotated as it gets larger, and the rotated log files are named vmkernel.x, where x is an integer.

To search the log file for error messages, at the command prompt, type:

```
#cd /var/log
#less vmkernel
```

For example, you might see the following message:

```
Sep 9 19:48:04 esx-server vmkernel: WARNING: Found a BE2 card in
Gen 1 x8 PCI-e slot. Should be in Gen 2, x8 slot for best
performance.
```

ESX Server NIC Event Log Entries

The following is a list of ESX Server network event log error messages. It includes the severity of the error, the message displayed, and the message description. When reporting a problem with the OneConnect UCNA to Emulex, check the message log (/proc/vmware/log) and report any of these entries that may be present.

Note: In the following table, <D>, <DD>, or <DDD> in the 'Message Displayed' column refers to decimal values that appear in the actual error messages

Table 7: ESX Server NIC Event Log Entries

Severity	Message Displayed	Description
Error	BladeEngine POST failed	Power ON Self Test of the OneConnect UCNA failed. This indicates either a hardware or a firmware problem. Try rebooting the system after a reset.
Error	`BladeEngine 2 initialization failed`	Either the initialization of the OneConnect UCNA or the allocation of some resource for initializing the driver failed. In most cases, this message is accompanied by another more specific error message. Try rebooting the system after a power cycling. If the problem persists, this could indicate a hardware problem or corrupted firmware.
Warning	`Using INTx interrupts. Net-Queues feature are disabled`	The driver could not allocate MSIx vector for interrupt. The driver may continue to work, but the performance may be impacted.
Warning	`WARNING: Found a BE2 card in Gen <D> x<D> PCI-e slot. Should be in Gen 2, x8 slot for best performance`	OneConnect is a x8, Gen2 PCI-e device. For best performance, OneConnect should be installed in a Gen2 PCI-e slot 8 or 16 channels wide. The driver prints this warning if it finds the device in a slower or narrower PCI-e slot. The device continues to work with lesser performance.

Table 7: ESX Server NIC Event Log Entries (Continued)

Severity	Message Displayed	Description
Warning	`Command to get pause frame settings failed`	The firmware command to get PAUSE settings failed.
Warning	`Command to set pause frame settings failed`	The firmware command to change PAUSE settings failed.
Warning	`Command to apply MAC address filter failed`	Driver could not set the MAC address filter on the hardware. The device continues to work. There may be an impact on the performance.
Warning	`Command to delete MAC address filter failed`	The firmware command to delete a MAC address filter failed. The device should continue to work.
Warning	`Unable to get Firmware Version`	The command to get firmware revision number failed. The version number is not shown. The device must continue to work.
Warning	`Did not receive completions for all TX requests`	While unloading the driver, some outstanding transmit requests are found. This is an indication that the hardware is not functioning properly.
Warning	`Failed to register char device`	Could not create the char device used for certain management functions. The driver must still work. You may not be able to use HBACMD to interact with the device.
Warning	`alloc_skb failed. Try increasing netPktHeapMaxSize`	Could not allocate skb structure to send a frame received from the network to the OS. Transient failure can be ignored. Persistent message points to insufficient memory allocated for network heap. For example, to increase the heap size to 128MB, run: `# esxcfg-advcfg -k 128 netPktHeapMaxSize`
Warning	`Invalid MTU requested. Must be between 64 and 8174 bytes.`	Invalid MTU size in MTU configuration ioctl. The MTU is not changed.
Warning	`Invalid vlan priority labeled. Must be 0 - 7`	Request to set VLAN priority tag was made with invalid value.
Warning	`Failed to allocate memory for pass through command`	Memory allocation for pass through command failed. The driver should continue to function. The configuration utility that issued the pass through ioctl fails.
Warning	Pass through command failed. opcode <DDD>, status 0x<XXX>	The pass through firmware command with indicated opcode failed. The driver should continue to function. The configuration utility that issued the pass through ioctl fails.
Warning	Command to modify EQ delay failed	Firmware command to change the EQ delay failed. The driver continues to function. The adaptive interrupt coalescing does not function correctly.

NIC Adapter Firmware Error

The following POST message appears if you have loaded firmware on the OneConnect adapter that the controller does not support:

```
POST Error : Firmware halted. This firmware does not support this
controller.
```

CIM Provider Troubleshooting

The following error message may appear if the CIM hosts are not properly added to the OneCommand Manager:

```
Unknown or invalid host specified
```

There could be instances when even with all the drivers, CIM Provider, and the CIM Client on a Windows machine are properly installed, the CIM hosts might still not get added to OneCommand Manager. Listed below are the most common reasons for this.

- The machine with the specified IP is not reachable. Try pinging the machine.
- The specified protocol (HTTP/HTTPS) is not supported by the CIMOM. Most often the CIMOM will be configured to use HTTPS. So if you are trying to connect with HTTP, you might get an error. Try using HTTPS instead.
- The namespace specified is wrong. Make sure the namespace conforms to Table 2, “Namespaces Used for Providers,” on page 18.
- The username or the password specified is wrong. Verify that the username given is correct, and try retyping the password.
- The CIMOM is not running on the ESX/ESXi host. Try restarting the CIMOM. You can check whether the CIMOM (sfcb) is running by typing the below commands.

```
#/etc/init.d/sfcbd-watchdog status
```

or

```
#ps -ef | grep sfcb
```

Also, if the CIMOM is listening to a different port than 5988 or 5989, the connection might not take place. You can configure the sfcb CIMOM settings by editing /etc/sfcb/sfcb.cfg.

If you still experience problems when adding the host, execute the following commands on the ESXi host and send the output to the Emulex Technical Support team.

```
vm-support dump
esxcfg-module -l
esxcfg-scsidevs -a
esxupdate --vib-view query | grep be2
esxupdate --vib-view query | grep lpfc
esxupdate --vib-view query | grep emu
esxcfg-nics -l
lspci
```

Send the “/var/log/messages” file for all of the above operations.

APPENDIX A DHCP Recommendations

If you use a DHCP (Dynamic Host Configuration Protocol) server to obtain an IP address for the OneConnect UCNA, Emulex recommends that you set up a reservation. A reservation assigns a specific IP address based on the MAC address of the OneConnect UCNA. If you do not reserve an IP Address through DHCP, then you must set the lease length for the OneConnect UCNA IP address to unlimited to prevent the IP-address lease from expiring.